

Social Determinants of Health and the Health System of Mozambique

Towards a comprehensive analysis
of health inequalities

Alba Llop Gironés

TESI DOCTORAL UPF / 2018

DIRECTORS DE LA TESI:

Dr. Joan Benach de Rovira (Department of Political and Social
Sciences. Universitat Pompeu Fabra)

Dr. Elisio Mazive (National Institute of Statistics of Mozambique)

DEPARTAMENT DE CIÈNCIES EXPERIMENTALS I DE LA
SALUT



A la meva família

Agraïments

Aquesta tesi és el resultat de la interacció amb moltes persones, institucions i llocs i així m'agradaria expressar-ho en aquesta secció. Quan vaig arribar per primera vegada a Moçambic al juny del 2015 vaig tenir la sort de trobar-me amb persones meravelloses que m'han acompanyat al llarg de tot el temps que he passat al país, persones amb les que he compartit converses interminables (o aquest era el meu desitg) i amb les que he viscut experiències inoblidables. A aquestes persones vull agrair tot el que m'han ensenyat: Ira, Nelly, Nelsa, Kell, Delton, Mbate, Venancio, també agraeixo a la Isaurinha, la Lourdes, en Jaime, i a les persones del meu carrer que sense saber-ho m'han ajudat a entendre la complexitat i la bellesa de la comunitat. Així mateix, vull agrair tot el que he après treballant a la OMS-Moçambic i d'una forma especial a la Silvia i la Hilde per confiar amb mi i deixar-me fer. També vull donar les gràcies al personal dels següents departaments del Ministeri de Salut: Despatx de la Ministra, Departament de Planificació i Cooperació, Salut Pública, Recursos Humans i als meus companys i companyes del Institut Nacional de Salut.

En la meua etapa a la Universitat Brown dels Estats Units, vaig tenir la sort de trobar-me amb la Valentina i la Karyn, que va mostrar-me altres formes de fer i de pensar. També agrair a la Felicia les converses en les moltes sessions preparatòries del cicle de cinema africà que vàrem co-cordinar anomenat 'History will speak: an African liberation film series' on l'important era entendre més que fer. En aquest sentit agraeixo al director de la iniciativa africana del Watson Institute for International and Public Affairs Dr. Daniel Jordan Smith la seva confiança i finançament per tal de poder realitzar el cicle de cinema. Per últim, aquesta experiència a la Brown no hagués estat possible sense la Dra. Nitsan Chorev amb la que he mantingut converses de gran valor acadèmic.

Al Departament d'Economia de la Universitat de Copenhagen, he trobat també un trosset de Moçambic i ha estat on he perfeccionat les meves habilitats estadístiques, gràcies a la paciència i ajuda del Dr. Sam Jones que m'ha guiat en la meua recerca durant tot el temps que he passat al departament.

I evidentment tinc molt a agrair al meu grup de recerca, a la Mireia, la meua companya de despatx físic o virtual amb la que sempre hi ha bona sintonia i sempre s'ha mostrat disposada a

ajudar-me, al Paco per les seves explicacions i ajuda i a la Lucinda perquè ella sempre ha estat quan ho he necessitat. També vull donar les gràcies als altres membres del GREDS que han anat passant pel grup des de 2013 quan jo hi vaig fer cap per primer cop i que han contribuït al meu procés de creixement com a recercadora. No puc deixar d'agraïr al director Dr. Joan Benach la confiança dipositada des del primer moment allà al 2013 quan vaig expressar que jo volia arribar a ser doctora, particularment vull agrair les tantes i tantes converses que m'han ajudat a desenvolupar-me com a recercadora, les recordo d'una forma especial perquè la il·lusió que jo he tingut per la recerca des del principi és la que ell ha mantingut des de sempre. També, voldria agrair al Dr. Elisio Mazive la codirecció de la tesis i els seus valuosos comentaris, que m'han fet reflexionar i millorar els meus raonaments. La seva experiència ha aportat molt sentit a aquesta tesis.

Per últim, vull donar les gràcies a la meva família. A la meva mare, el meu pare, la meva germana i el meu germà perquè sempre han cregut en mi i perquè com a persones que pertanyen a la terra que els ha vist néixer i créixer sempre han cregut en un futur millor, ells són els que m'han ensenyat el significat de la lluita de la vida diària i han posat en mi les esperances que jo tinc en ells. I, al Gael, per inspirar-me, per la seva capacitat de comprensió i d'estima i perquè la vida és més bonica al seu costat.

Abstract

The present thesis aims to give a critical overview of the health care and health inequalities for the Mozambican case. The thesis is divided into four articles, two of them are quantitative articles analysing data from the Mozambican household budget survey, while the other two articles employ different methodologies: a systematic review and data source mapping. Findings show that in Mozambique, despite the overall health status has improved over time, women, children, elders and the population living in rural areas of the country are left behind in the progress to attain better health. Structural factors are the major drivers of health inequalities and people's access to basic services and material conditions, although crucial, are not the main causes of health inequalities in Mozambique. Another key finding is that a comprehensive view of the health system based in primary health care is fundamental for addressing health care inequalities. In Sub-Saharan Africa, the access to and quality of primary health care is mainly determined by the social position, rather than by the need, and health care inequalities persist over time. These results allow drawing conclusions for the improvement of the equity in the access to quality care in Mozambique. In the country, 70% of Mozambicans use healthcare services when having a health need, and despite there are no differences in the direct payments for the public sector visits, significant socio-economic and geographical inequalities were found for women and men in the access to and quality of care received. Finally, this thesis highlights the important information gaps that exists in the national health information system to monitor health equity in Mozambique.

Resumen

La presente tesis tiene como objetivo ofrecer una visión crítica de las desigualdades sanitarias y de salud para el caso de Mozambique. La tesis se divide en cuatro artículos, dos de ellos son artículos cuantitativos que analizan datos de la encuesta sobre el presupuesto familiar de Mozambique, mientras que los otros dos artículos emplean diferentes metodologías: una revisión sistemática y un mapeo de fuentes de datos. Los resultados muestran que en Mozambique, a pesar que el estado general de salud ha mejorado con el tiempo, las mujeres, los niños, los ancianos y la población que vive en las zonas rurales del país se quedan atrás en el progreso para lograr una mejor salud. Los factores estructurales son los principales impulsores de las desigualdades en salud y el acceso de las personas a los servicios básicos y las condiciones materiales, aunque cruciales, no son las principales causas de las desigualdades en salud en Mozambique. Otro hallazgo clave es que una visión integral del sistema de salud basada en la atención primaria de salud es fundamental para abordar las desigualdades en la atención de la salud. En el África Subsahariana, el acceso y la calidad de la atención primaria de salud se determina principalmente por la posición social, más que por la necesidad, y las desigualdades en la atención de la salud persisten a lo largo del tiempo. Estos resultados permiten extraer conclusiones para la mejora de la equidad en el acceso a la atención de calidad en Mozambique. En el país, el 70% de los mozambiqueños usan los servicios de salud cuando tienen una necesidad de salud y, a pesar de que no existen diferencias en los pagos directos para las visitas al sector público, se encontraron desigualdades socioeconómicas y geográficas significativas para las mujeres y los hombres en el acceso a y la calidad de la atención recibida. Finalmente, esta tesis resalta las importantes lagunas de información que existen en el sistema nacional de información de salud para la evaluación de la equidad en salud en Mozambique.

Resum

Aquesta tesi té com a objectiu oferir una visió crítica de les desigualtats sanitàries i de salut per al cas de Moçambic. La tesi es divideix en quatre articles, dos d'ells són articles quantitativs que analitzen dades de l'enquesta sobre el pressupost familiar de Moçambic, mentre que els altres dos articles fan servir diferents metodologies: una revisió sistemàtica i un mapeig de fonts de dades. Els resultats mostren que a Moçambic, malgrat que l'estat general de salut ha millorat amb el temps, les dones, els nens, els ancians i la població que viu a les zones rurals del país es queden enrere en el progrés per aconseguir una millor salut. Els factors estructurals són els principals impulsors de les desigualtats en salut i l'accés als serveis bàsics i les condicions materials, tot i que són crucials, no són les principals causes de les desigualtats en salut a Moçambic. Una altra troballa clau és que una visió integral del sistema de salut basada en l'atenció primària de salut és fonamental per abordar les desigualtats en l'atenció de la salut. A l'Àfrica Subsahariana, l'accés i la qualitat de l'atenció primària de salut es determina principalment per la posició social, més que per la necessitat, i les desigualtats en l'atenció de la salut persisteixen al llarg del temps. Aquests resultats permeten extreure conclusions per a la millora de l'equitat en l'accés a l'atenció de qualitat a Moçambic. Al país, el 70% dels moçambiquesos fan servir els serveis de salut quan tenen una necessitat i, tot i que no hi ha diferències en els pagaments directes per a les visites al sector públic, es van trobar desigualtats socioeconòmiques i geogràfiques significatives per a les dones i els homes en l'accés i la qualitat de l'atenció rebuda. Finalment, aquesta tesi ressalta importants llacunes d'informació que hi ha en el sistema nacional d'informació de salut per a l'avaluació de l'equitat en salut a Moçambic.

Preface

This thesis is the result of the work carried out in Mozambique at the country office of the World Health Organization, the Watson Institute for International and Public Affairs at Brown University, and the Economics Department at the University of Copenhagen, under the general guidance of my tutors and the support of the GREDS-EMCONET research group at the University Pompeu Fabra in Barcelona.

The general interest in health care and health inequalities in low income countries have grown during the last years in the context of the sustainable development goals and the 'leaving no one behind' agenda. However, public health field in these settings has long been dominated by a strong tradition of biomedical studies with a selective focus on specific health services targeting specific populations with high burden of diseases and deaths, such as maternal and child care, malaria, HIV, and TB. This thesis starts from the interest in giving a critical overview of the causes of health and health care inequalities focusing on the Mozambican case. The experience in Mozambique, and in the different organization and academic institution have contributed to enriching its final content.

The work was partially supported by the European Commission: Nova Domus – Chemedpho project (545700-EM-1-2013-1-ES-ERAMUNDUS-EMA22); the Departament d'Acció Exterior, Relacions Institucionals i Transparència de Catalunya (2015CANIG00004); and, medicusmundi (AECID: 14-CO1-424).

TABLE OF CONTENTS

ABSTRACT	VII
RESUMEN	IX
RESUM.....	XI
PREFACE	XIII
LIST OF FIGURES.....	XVII
LIST OF TABLES.....	XVIII
LIST OF ABBREVIATIONS.....	XIX
I. INTRODUCTION.....	1
1. Health care and inequalities in health.....	3
1.1 <i>Social determinants of health with a focus in Sub-Saharan Africa</i>	<i>3</i>
1.2. <i>Health care as a social determinant of health.....</i>	<i>13</i>
2. Socioeconomic inequalities in the access to quality care	15
3. The Mozambican case	18
3.1. <i>Sociodemographic context of Mozambique</i>	<i>18</i>
3.2. <i>Health policies and the health system of Mozambique....</i>	<i>22</i>
4. Theoretical framework of the thesis	35
4.1. <i>Social determinants of health</i>	<i>35</i>
4.2. <i>Framework for the study of access to quality care.....</i>	<i>37</i>
4.3. <i>Determinants of socioeconomic inequalities in the access to quality care</i>	<i>39</i>
4.4. <i>Structural determinants of the access to quality care</i>	<i>40</i>
II. JUSTIFICATION.....	41
III. HYPOTHESIS AND OBJECTIVES.....	45
IV. METHODS	47
1. Quantitative studies	47
2. Systematic review	48
3. Data source mapping	48
4. Ethical considerations	49

V. RESULTS	51
Article 1: Beyond access to basic services: perspectives on social health determinants of Mozambique	53
Article 2: Equity in the access and quality of primary health care in Sub-Saharan Africa: a systematic review	89
Article 3: Inequalities in the access to and quality of health care in Mozambique: evidence from the household budget survey .	135
Article 4: Strengthening health equity monitoring is an essential public health need: Lessons from Mozambique	155
VI. DISCUSSION	167
1. Social determinants of health inequalities in Mozambique ..	167
2. Health care inequalities with a focus on Mozambique.....	170
3. Health information systems and gaps for monitoring health inequalities in the Mozambican context	175
4. Strengths and Limitations	177
5. Research challenges and policy implications	180
VII. CONCLUSIONS.....	183
XIII. BIBLIOGRAPHY	185
IX. APPENDIX	201

List of figures

Figure 1. The conceptual framework of the Commission on Social Determinants of Health.....	4
Figure 2. Street art in the district 6 of Cape Town (South Africa) ...	6
Figure 3. Woman selling fruits in the streets of downtown Maputo (Mozambique) on Sunday	10
Figure 4. Political map of Mozambique, its provinces, districts and political boundaries.....	19
Figure 5. Rural area of Cabo Delgado province, northern area of Mozambique	20
Figure 6. Percentage of households that needs more than 30 minutes to reach the health facility	33
Figure 7. Framework for the study of access.....	37

List of tables

Table 1. Gender distribution for relevant indicators (2016-2017)..	11
Table 2. Examples of the countries' life expectancy, years lost due to disability and total health expenditure.....	14
Table 3. Indicators to measure progress in the PQG (2015-2019).	25

List of abbreviations

CFMP	Medium term fiscal framework
CMAM	Centre of Medicines and Medical Articles
CNCS	National Council for the Fight Against HIV/AIDS
CRVS	Civil registration and vital statistics
DPS	Provincial Directorate of Health
FRELIMO	Front for the Liberation of Mozambique
GTF	Health financing strategy technical working group
HIS	Health information system
IMF	International Monetary Fund
LOLE	Law for local state bodies
MoH	Ministry of Health (of Mozambique)
MEF	Ministry of Economy and Finance
NGO	Non-governmental organization
NHIS	National health insurance scheme
NHS	National health service
OOP	Out-of-pocket payments
PES	Economic and social plan
PESS	Health sector strategic plan
PHC	Primary health care
PQG	Government's five-year plan
SAP	Structural adjustment programme
SDG	Sustainable development goals
SDSMAS	District Services of Health, Women and Social Affairs
THE	Total health expenditure
UN	United Nations
UNICEF	United Nations International Children's Emergency Fund
UHC	Universal Health Coverage
WHO	World Health Organization
WB	World Bank

I. INTRODUCTION

The interest in the complex interplay between social conditions, economics, politics and health has increased over the last decade. Compelling evidence has shown the persistence of health inequalities¹ between the most and less advantaged population in a society in a gradient fashion (Braveman and Gottlieb, 2014; Solar and Irwin, 2010). Health inequities² are a matter of social justice because they are socially produced, and the fact that people in different social circumstances experience avoidable differences in health outcomes is unfair and unnecessary (CSDH, 2008).

Knowledge of the association between unequal health outcomes and social factors is longstanding, however the interpretation of the causes has changed over time. In this thesis social health inequities are understood as the result of political processes and systematic differences in the distribution of power, prestige and resources among social groups that result in unequal life chances, living standards and lifestyles (Solar and Irwin, 2010), thus, Social Determinants of Health (SDH) can be ameliorated through public health, social policies and action (CSDH, 2008).

The scientific literature on SDH has mainly concentrated on the Western research experience (Dahdouh-Guebas *et al.*, 2003; Pellegrini Filho, 2011). Despite that premature death and avoidable diseases continue to be disproportionately concentrated in Sub-Saharan Africa (SSA), scarce scientific literature exists about what constitutes the underlying SDH in this region and a large number of low income countries (Cash-Gibson *et al.*, 2018) and how political and economic changes are impacting health and health inequalities.

¹ Health inequalities refer to those observable differences between population subgroups that can be measured and monitored. They are an indirect means of evaluating health inequity (Whitehead, 1992).

² Health inequities is the normative concept to refer to the unjust differences in health between different social groups (CSDH, 2008).

In SSA over the last decades the available health information, the scientific literature production and its different approaches to health occurred within the large social and economic context of this region (Cueto, 2004; Irwin and Scali, 2007). From colonial times to the present, the changing perspectives of development and dependency have influenced the prevailing health models at a time and its beneficiaries (Werner and Sanders, 1997). In this regard, a large number of policies, financing and actions against poor health have been developed with a big emphasis on the provision of basic services, with a particular attention on selected medical services to population subgroups such as children, women of childbearing age, and on specific infectious diseases as malaria, HIV and TB, partially due to its significant burden of disease (United Nations, 2015b). As a consequence, research has mostly focused on the lack of access to these specific services (Mezmur *et al.*, 2017; Mtowa *et al.*, 2017), but very few studies analysed the equity in the access to quality care based in Primary Health Care (PHC) from a comprehensive perspective (Phiri and Ataguba, 2014). This issue is essential for the improvement of national health systems in order to be able to provide high-quality services to the population with special emphasis to those groups in more need. Additionally, despite gender and its interations with different aspects of social position and identity affect health needs, experiences and outcomes, they are often neglected in the health systems literature of low and middle income countries (Morgan *et al.*, 2018).

Mozambique constitutes an interesting case study because it is one of the poorest countries in the world, a major recipient of health aid, ranking 181st out of 188 countries in the Human Development Index 2016 and the average life expectancy at birth, despite it improved over time, only was 58 years in 2016 (The World Bank, 2018a). The Constitution endows all citizens with the right to health (art. 89), yet the focus of national health policies mainly remains on the provision of health care services. Mozambique is one of the few countries in SSA where public

policies outside of the health sector do not consider other health-related issues (World Health Organization, 2013a), which may potentially prevent progress for intersectoral actions towards health equity. Currently, the country is involved in a process of health sector reform, which also make this thesis timely and pertinent.

In this thesis, we give a critical overview of the causes of health and health care inequalities with a focus on the Mozambican case. First, we analyse the role of SDH in producing health inequalities in Mozambique to inform long-term policy interventions. Second, we systematically review the literature on equity in the access to and quality of PHC for the SSA region to contribute to the comprehensive understanding of the health system in Mozambique within SSA. Third, we empirically appraise the health care inequalities for the Mozambican case, we put special emphasis on the equity in the access to and quality of care as it is necessary for the short-term given the stark burden of diseases and its contribution to ameliorating health inequities. Finally, in order to improve the current information systems to inform public policies, we conduct a data source mapping of the health information available in Mozambique to tackle health inequalities.

The introduction of the present thesis is organised as follows. First, there is an introduction to health care and inequalities in health with a focus in the SSA region. Next, an overview of the socioeconomic inequalities in the access to quality care is presented. Followed by a description of the Mozambican case. Finally, the theoretical framework of the thesis is developed.

1. Health care and inequalities in health

1.1 Social determinants of health with a focus in Sub-Saharan Africa

In 2008 the World Health Organizations' Commission on Social Determinants of Health (CSDH) meant a qualitative change and unprecedented advances in health policy to tackle SDH

(Palència *et al.*, 2017). The Commission found abundant evidence that not addressing SDH results in low incomes, poor living and working conditions and exclusion that in turn have an impact in creating health inequity between the different social groups. The most important features of the conceptual framework of SDH that are further explained in the following pages are the distinction between: a) the economic and political institutions and decisions that create and perpetuate economic and social privilege, named the structural determinants of health; and, b) the social factors that influence health, labelled as intermediary determinants of health (CSDH, 2008) (Figure 1).

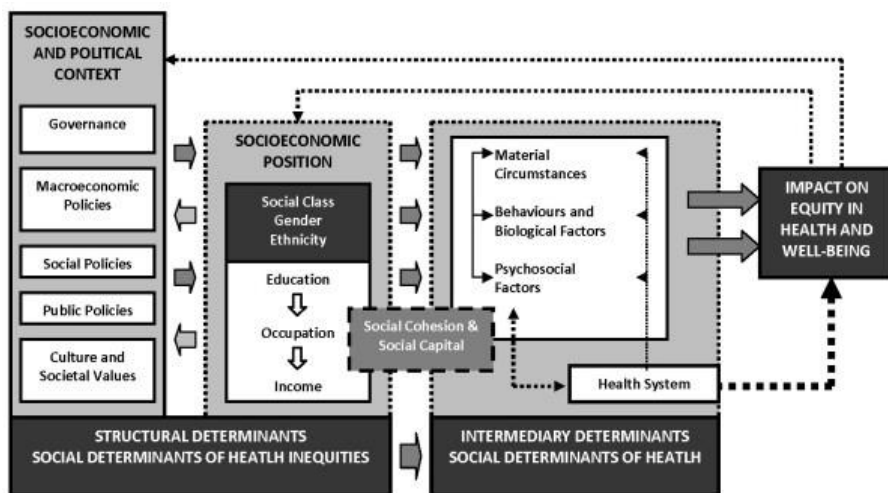


Figure 1. The conceptual framework of the Commission on Social Determinants of Health. Source: CSDH (2008)

Structural determinants

Structural determinants are factors that significantly affect the social structure and the distribution of power. They are part of a specific political and historical context and constitute social and political mechanisms that generate, configure and maintain social hierarchies, such as the labor market, the educational system or political institutions including the welfare state. Socioeconomic and

political determinants include: 1) governance, in the broadest sense and its processes, including definition of needs, transparency /corruption in public administration, unions power, patterns of discrimination and civil society participation; 2) macroeconomic policy, including fiscal, monetary, balance of payments and trade policies and underlying labor market structures; 3) policies and power relations between social agents that affects the labor market (Benach and Muntaner, 2014) and public policies which shapes the welfare state (Chung and Muntaner, 2006, 2007): education, health care, land and housing distribution; and, 4) culture and societal values.

Governance, broadly understood, has the potential of protecting and improving the health and well-being of the population, however, the policies (and its accountability mechanisms) in SSA failed to protect public health. Tangible outcomes of inadequate governance are poverty, illiteracy, unemployment, food insecurity, poor housing conditions, and migration (Eshetu and Woldesenbet, 2011). Colonization, prolonged armed conflicts within and between SSA countries, transnational corporate activity, unfavourable trade agreements, aid-dependency and corruption have not helped in the improvement of the situation (Eshetu and Woldesenbet, 2011; Ottersen *et al.*, 2014) and have created political and social unrest and strong resistances (Figure 2).

An example is the Structural Adjustment Programme (SAP) launched in the 1980s in many African countries that increased their aid-dependency, put the countries deeper into economic debt and reduced investments in social services. In fact, despite it is clear that economic growth is required to improve SDH, it is also important that economic progress and profit-making are linked to equity considerations. Benjamin (2007) illustrates its impact for the case of Women from Bayview (Chatsworth, South Africa). As Benjamin explains, the feminization of poverty in Post-Apartheid South Africa was exacerbated by the impact of the privatization of basic services, such as water, electricity, or health care, and home

evictions that seemed to be worsening along the years of democratic South Africa.



Figure 2. Street art in the district 6 of Cape Town (South Africa). Own photo.

In SSA, the political determinants of health, understood as “the transnational norms, policies, and practices that arise from political interaction across all sectors that affect health” (Ottersen *et al.*, 2014) have been analysed in two studies (Andoh *et al.*, 2006; Atti and Gulis, 2017) and both found evidence of associations between political determinants and health outcomes. Andoh *et al.* (2006) found national net income per capita as one of the predictors of mortality in African countries, while Atti and Gulis (2017) showed that political conflict and political participation were stronger predictors of slow progress in under-5 and maternal mortality rate, while regime types was a weaker predictor of slow progress in under-5 mortality rate.

The structural determinants also include culture and societal values, as for example the extent to which health is a priority in the governmental/societal agenda (Solar and Irwin, 2010). It is also relevant that “the implementation of new regimes of care, driven by

and financed through the interventions of transnational organizations are enmeshed with and transformative of long-standing public health sites and practices” (McKay, 2018).

The evaluation of intersectoral actions to reduce health inequalities within countries was identified as a priority by the CSDH (2008) because each aspect of government and economy can potentially affect health equity. However, the most recent multi-country evaluation of intersectoral actions in SSA in 2013, showed that some countries, as in the case of Mozambique, still do not include health in all policies (World Health Organization, 2013a). This continues to be highlighted as a great challenge particularly, for SSA countries (Ndumbe-Eyoh and Moffatt, 2013). In the present thesis we overcome this need with the identification of the most relevant SDH for the Mozambican case.

Another element of structural determinants is the social position or the power hierarchy in the society, such as social class, gender, age, ethnical background/race and territory. These axes of social health inequality determine the chances of having a good health due to systematically unequal distribution of power, prestige and resources among groups in society. In this sense, privileged social class (Marmot and Commission on Social Determinants of Health, 2007), white men (Krieger, 2000, 2003; Bambra *et al.*, 2009), and population from advantaged geographical areas are the major beneficiaries. Unequal axes are related to systematic discrimination (classism, sexism and/or racism) where class, gender or race relations are unfair based on institutional or personal practices, where members of a dominant group become privileged at expenses of subordinating other people and justifying the practices through ideological constructs (Krieger *et al.*, 2005).

An important point to also consider is the intersectionality of the axes of social inequality. The intersectionality is an approach that “moves beyond single or typically favoured categories of analysis (e.g. gender, race and class) to consider simultaneous interactions between different aspects of social identity [...] as well as the impact of systems and processes of oppression and

domination” (Hankivsky, 2012). The main principles of this theory include that human lives cannot be reduced to single characteristics, and human experiences cannot be accurately understood by prioritizing any one single social factor. Thus, there is not a predetermined or pre-hierarchical pattern between categories (Hankivsky, 2012). Intersectionality theory also recognizes the multidimensional and relational nature of social inequality. It also maintains that interactive processes between axes of inequality are influenced by both time and place (Hankivsky, 2012). Nowadays, intersectionality is recognized as a valuable conceptual and research paradigm for furthering understanding of the complexity of health inequalities (Weber and Parra-Medina, 2003), and despite the lack of studies, it is also relevant for SSA societies where for example the nature of gender inequalities may be highly dependent of family composition and earnings structure, social class, ethnicity and place of residence.

In SSA some studies have assessed the factors producing socio-economic gradient in morbidity and mortality in selected populations; mainly in children (Macassa *et al.*, 2003; Zere and McIntyre, 2003a; Adewuyi *et al.*, 2017; Hangoma *et al.*, 2017), HIV positive population (Pons-Duran *et al.*, 2016; Sia *et al.*, 2016), and malaria (Hailu *et al.*, 2016). However, among these, the studies addressing SDH for general population and focusing on general health status, rather than individual diseases or population group, are very scarce (Ataguba *et al.*, 2015). The final conclusion of most studies is the pervasive existence of health inequalities. However, what is less clear in the literature is the role the SDH play in producing health inequalities.

Intermediary social factors

The socioeconomic and political context directly affects intermediary social factors which in turn generate health inequities. Intermediate factors are the unequal distribution, associated with differences in exposure and vulnerability to health-compromising

conditions of: material circumstances (neighbourhood, working and housing conditions); social-environmental and psychosocial circumstances (for example, stressful living circumstances) and behavioural and biological factors. Also, the health care system constitutes an intermediate factor, as its access determines the differences in exposure and vulnerability (CSDH, 2008).

In SSA, many SDH have not improved much in the last decades. While some countries in the region are experiencing an economic growth, an important proportion of the population in countries as Mozambique practices subsistence agriculture, and the number of jobs in the formal sector has not increased proportionally to the economic growth. During the period 2000-2012, employment in 49 lower income countries, including SSA countries, increased by just 2.9% (below the average economic growth of 7%) (WHO Regional Office for Africa, 2014). Additionally, high rates of informal employment and negligible labor protection are linked to work-related injuries, occupational hazards and illness, exposure to dangerous chemicals and pollutants, and deaths caused by preventable accidents (Garimoi Orach, 2009). Here, it is worth mentioning specific areas of work and occupational health relevant in the SSA context such as mining and domestic workers.

A poem written by Malangatana Valente Ngwenya, O Mineiro Sobrevivente illustrates the situation for the mine workers:

Sou sobrevivente dos milhões
mortos por falta de ar puro
não estavam êles habituados
ao ar condicionado
e à mina que os entupiu.
Morreram morreram sem se despedirem
debaixo daquela mina de ouro
debaixo de aquela caverna
onde só há homem³.

³ I am a survivor of the millions / dead through lack of pure air/ they were unaccustomed/ to the air conditioning / and to the clogged mine.
They died they died without a farewell / down in that gold mine / down in that cavern / where not even a hen clucked / where there are only men.

Data on domestic workers for SSA is almost inexistent, but in general terms, it is known that South Africa has the largest number of domestic workers, 3 out of 4 are women and the vast majority are black women concentrated in the provinces of Gauteng and KwaZulu-Natal (ILO, 2013). The lowest number of workers are in West and East Africa, but it may be related to the fact that they are not legally recognized as workers⁴. As ILO itself has recognized “at present, domestic workers remain one of the least protected groups of workers under national labor legislation” (ILO, 2013). Workers lack rights and the isolated and unprotected nature of domestic work can render domestic workers vulnerable to exploitation and abuse (ILO, 2013).



Figure 3. Woman selling fruits in the streets of downtown Maputo (Mozambique) on Sunday. Own photo.

In daily life in SSA, gendered unequal access to and control over material and non-material resources and unfair division of

⁴ In Mozambique exists the Decree 40/2008, but the legislation is not effectively enforced.

work, leisure have an impact in the distribution for relevant indicators, such as education, work, and health.

Table 1. Gender distribution for relevant indicators (2016-2017)

	Sub-Saharan Africa		Middle income countries		High income countries		World	
	F	M	F	M	F	M	F	M
Primary school-age children (%)	75.9	81.0	92.3	94.0	96.6	96.2	90.0	92.1
Labor force participation rate (% of population ages 15+)	62.8	73.8	46.3	76.5	52.6	68.6	48.9	75.3
Wage and salaried female workers (% of female labor force)	19.9	-	48.4	-	88.9	-	55.9	-
Unemployment (% of female labor force)	8.2	-	5.8	-	6.5	-	6.0	-
Seats held by women in national parliament (%)	24.0	-	21.5	-	28.0	-	24.0	-
Life expectancy at birth, in years	62.1	58.7	73.5	69.3	83.1	77.8	74.3	69.9

Source: The World Bank, 2018a, 2018b. All statistics are presented for the year 2016 except for Seats held by women in national parliament which is reported for the year 2017. F: Female; M: male.

Table 1 shows gender distribution of different indicators for SSA, middle and high income countries, and the world's average (The World Bank, 2018b). Compared to the other regions shown, SSA primary school enrolment rates already show a gender imbalance early in life (75.9% female vs 81% male), that continues during working ages, where, despite having a larger female labor force participation (62.8%), SSA female workers have the lowest

salaries (19.9%)⁵ and unemployment rate is the highest in SSA, measured as the percentage of female labor force (8.2%), this may indicate that women in a disadvantaged position are employed and segregated in lower-paid, less secure, and 'informal' occupations (Figure 3). The seats held by women in national parliament (24%) are the same as the world's average. The life expectancy is consistently higher for females in all the world regions, which may indicate that elder women are particularly vulnerable to suffer deprivation and exclusion, which inherently create vulnerability to poor health (World Health Organization, 2015a) (Table 1).

Also, poverty and its effects on the population health are stark in SSA, through the impact of poor nutrition, crowded and unsanitary living conditions and inadequate health care, particularly in rural and deprived areas. The access to basic services is precarious in SSA. For example, 24.2% of the population has access to safe water (compared to 71.2% of world's average population), 42.8% of the population has access to electricity (compared to 87.4% of world's average population) (The World Bank, 2018b). This hazardous living conditions are also reflected in the leading causes of death in the African region which continue to be infectious and parasitic diseases, respiratory infections, maternal and neonatal conditions and nutritional deficiencies. They globally account for 56.5% of the deaths of women and 55.5% of the deaths of men. In the case of children 1-59 months the three leading causes are acute respiratory infection, malaria and diarrhoeal diseases (World Health Organization, 2016a). Access to health care also remains inequitable in the African region: more than 62% of people are living in informal settlements in slums and rural areas, with little access to health care and only 38% live in urban areas and have good access to health care (WHO Regional Office for Africa, 2014).

There are some studies analysing the health inequalities for specific material conditions, as housing conditions (Herrin *et al.*, 2013) and access to basic services, mainly access to a safe water

⁵ It is important to mention that no data is available of the proportion of time spent on unpaid domestic and care work (The World Bank, 2018b).

source (Ntouda *et al.*, 2013; Dos Santos *et al.*, 2015). They found an association between those specific conditions and the health, however, some questions remain unanswered in the SSA context. For example: Do basic services play an equal role in reducing the health inequalities? At which extent do they contribute to the reduction in inequalities in health?

1.2. Health care as a social determinant of health

The main objective of the health care system is to provide timely and adequate care to restore or improve the health and well-being of a person, group, and a community; it is also responsible for preventive measures to protect the population from acquiring diseases. In SSA, health care is especially important given the high burden of disease, and the health care system itself is a SDH, influenced by and influencing the effect of other social determinants which can contribute to ameliorate the health inequalities (CSDH, 2008). However, this relation is not ever clear, and a number of researchers especially in Western countries have worked to disentangle the role of health care in the improvement of health. Mckeown *et al.* (1975) suggested that the reduction in the mortality from infectious diseases during the nineteenth century in England and Wales was the result of the changing environment and improved living standards, as improved nutrition and sanitation, and not because of the impact of the health care. This work gave rise to an in-depth discussion on the role of the health care in reducing mortality and a bunch of research in Europe and United State made quantitative estimations and found that the health care contributed in increasing life expectancy an average of between 3 to 5 years (Mackenbach *et al.*, 1988; Bunker *et al.*, 1994).

In SSA, over the last decades, the countries have made tangible progress towards expanding the network of primary care facilities (mainly health posts). This expansion aimed at addressing high rates of child and maternal mortality, as well as the prevalence of specific communicable diseases such as HIV/AIDs, tuberculosis

and malaria with a preference for high impact technical health interventions (Cueto, 2004; Irwin and Scali, 2007).

Some research in the SSA region consistently showed that poor access and quality of health care has an impact in maternal and neonatal mortality (Chinkhumba *et al.*, 2014). Also, this effect is consistent with the immunization programmes that contribute in the reduction of child deaths and disabilities, particularly that for measles and polio (WHO Regional Office for Africa, 2014). However, in SSA lacks a deep understanding on the contribution of the health care in the improvement of poor health. For example, in Table 2 we compare for some SSA countries two relevant health indicators, such as countries' life expectancy as a health outcome indicator, and years lost due to disability as a measure of the burden of disease. Also, it is added the total health expenditure. A priori, no relation between life expectancy and total health expenditure per capita is observed, but the years lost due to disability seems to have a relation with the total health expenditure. We will further study the role of the health system in the present thesis for the Mozambican case.

Table 2. Examples of the countries' life expectancy, years lost due to disability and total health expenditure[†]

	Ethiopia	Kenya	Mozambique	Ghana	Angola
Life expectancy at birth in years	65.5	67	58	62.7	61.5
Years lost due to disability	8.7	3.9	2.8	2.5	2.2
Total health expenditure per capita in US\$	< 20	20–44	20–44	> 44	> 44

Sources: World Health Organization, 2013b; The World Bank, 2018a; World Health Organization, 2018. [†]Data for life expectancy at birth and years lost due to disability is reported for 2016 and total health expenditure is shown for 2010.

2. Socioeconomic inequalities in the access to quality care

From an egalitarian perspective, access to health care should be equal to the health needs (Whitehead and Dahlgren, 2007), and irrespective of the socioeconomic position of social class, gender, age, ethnical background/race and territory (Hanratty *et al.*, 2007), while ensuring that the health system decreases, instead of increases, the inequalities in health (Ruger, 2007). The concept of access to quality care is complex and has been widely discussed in the literature (Aday and Andersen, 1974; Penchansky and Thomas, 1981; O'Donnell, 2007; Arrivillaga and Borrero, 2016). It is generally defined as the fit between patients and the health care system, however, decisions, such as the use of a health service, are the result of contextual and social circumstances, and hardly only a matter of choice (CSDH, 2008). The measurement of access is commonly approximated by measuring the differences in the utilization as an indicator of inequitable access (Taffa *et al.*, 2005; Nhampossa *et al.*, 2013; Begashaw *et al.*, 2016), we will also consider inequalities in utilization as proxies for inequalities in access to health care.

There is substantial evidence that PHC is where timely access to safe and appropriate care is most critical for the health and well-being of populations (Starfield *et al.*, 2005). Initially, the concept of PHC was envisioned in Alma Ata where took place the International Conference on Primary Care in 1978. It had the presence of 134 governments and 67 international organizations who subscribed to the goal of “health for all by the year 2000” by means of a comprehensive approach called Primary Health Care. At that point, the representatives recognized that health was not just the exchange between health personnel and patient and the PHC concept explicitly incorporated actions to address the underlying social, economic and political causes of poor health (WHO and UNICEF, 1978), which had strong political influences from the diverse grassroots initiatives of community-based health

programmes in China, Latin America or Philippines. Those initiatives considered health (and healthcare) a basic human right and based their actions on a bottom-up approach (Werner and Sanders, 1997). However, progress in the implementation of the PHC in SSA was stalled in the mid-1980s, when the global rise to dominance of the neoliberal model, changed the focus to a more selective and disease-oriented approach to health (Cueto, 2004; Irwin and Scali, 2007). The implication of this was a preference for top-down and high impact technical health interventions, with a preference for the distribution of (lucrative) commodities related to health such as vaccines, contraceptives, antivirals, among other necessary medical products. An example of an intervention is the ‘GOBI’ (growth charts, oral rehydration, breastfeeding, immunization) approach to reduce infant mortality (Cueto, 2004; Irwin and Scali, 2007).

At the same time, the health sector reforms which took place in SSA mostly during the 1990s and 2000s also impacted the progress towards a more equitable distribution of the access to and quality of care in the region (Beste and Pfeiffer, 2016). They have been primarily concerned with the introduction of user fees, the establishment of a basic package of care and experimentation with health insurance schemes. Two examples of two different reforms are Ethiopia and Ghana. The health sector reform in Ethiopia began in 1998. Key components of the reform are: the maintenance of services fees with partial exclusion for vulnerable groups, a standardized basic package of critical public health services, outsourcing of services of public hospitals and establishment of private areas within public centres for patients who are willing to pay (Wang and Ramana, 2014). The health insurance schemes introduced in Ethiopia are: a social health insurance for those employed in the formal sector and a community-based health insurance for the agricultural and informal sectors. A different example is Ghana that in 2003 established by law the National Health Insurance Scheme (NHIS), it aimed at removing the financial barrier to health services by limiting out-of-pocket

payments (OOPs) at point of service. Membership in the NHIS is financed on a national basis from a single fund and main source of financing is the 2.5% VAT-based national health insurance where vulnerable groups remain exempt of payment (children under 18 years, pregnant women, elderly, pensioners and marginalised population). NHIS has a benefit package that covers outpatient services, such as inpatient care and maternity care, but excludes the expensive services as cancer treatment, and dialysis among other tertiary services (Kusi *et al.*, 2015). Despite Ghana has eliminated OOPs and while results are not uniform, studies in both countries show persistent inequalities in the use of health services affecting more the population in disadvantaged position (Memirie *et al.*, 2016), particularly for maternal health services (Johnson *et al.*, 2016; Mezmur *et al.*, 2017).

The current public health systems in SSA countries are characterized by a primary level with a very poor infrastructure, scarce skilled health personnel⁶ and, unfortunately and much more common than it is often imagined, unavailable basic requirements such as running water, reliable power supply, drugs, oxygen, safe transportation or diagnostic and therapeutic equipment (Kruk *et al.*, 2018). The public health system also suffers from having a weak specialized level with an important presence of private providers and fragmentation between organization and service delivery, as common source of inefficiency.

The current global health agenda based on moving forward to universal health coverage (UHC), in the context of the SDG and ‘leaving no one behind’, has revitalized the debate around health care and the need to reduce the inequalities in the access to and quality of the national healthcare systems, especially in those countries in worse conditions like SSA countries (United Nations, 2015a). The health-related goal SDG 3 calls to ‘ensure healthy lives and promote well-being for all at all ages’, and universal health

⁶ In Africa, it is estimated a needs-based shortage of 4.2 million health care workers (World Health Organization, 2016b).

coverage (SDG target 3.8) is the target that underpins all other health and health-related targets. However, as Evans *et al.* (2013) puts in, a comprehensive approach based in universal access to health care is a necessary precondition to achieving UHC.

The majority of the articles addressing the inequalities in the access to health care in the region focus on the utilization of specific services, such as child and maternal care (Larsen *et al.*, 2016; Bayham *et al.*, 2017), vaccination (Oryema *et al.*, 2017), HIV (Mtowa *et al.*, 2017) or malaria (Hailu *et al.*, 2016), rather than considering the entire health system (Buor, 2004) or the different levels of care (i.e. primary care and specialized care) (Zere and McIntyre, 2003b; Phiri and Ataguba, 2014). Also, these studies have not accounted for variations in the quality of care and the studies that analyse quality mostly refer to maternal services (Lee *et al.*, 2016; Larson *et al.*, 2017; Sharma *et al.*, 2017). In general, the studies show persistent inequalities in the utilization of health care and considerable variations in the inequalities in the quality of care, which emphasise the need for assessments within countries.

3. The Mozambican case

3.1. Sociodemographic context of Mozambique

Mozambique is a country in Southeast Africa, roughly oblong in shape and bordered by the Indian Ocean to the East. Administratively, Mozambique is divided into 10 provinces and one capital city with provincial status. The provinces are subdivided into 154 districts, which are further divided in 419 Administrative Posts and then into Localities. The two major cities are Maputo (the country capital) and Beira (see Figure 4).



Figure 4. Political map of Mozambique, its provinces, districts and political boundaries.

In 2018 Mozambique is expected to reach over 27 million inhabitants (52% are women) holding a very young age structure: 49% of the population is under 18 years old and only 3% above the age of 60 (Instituto Nacional de Estatística, 2018). Zambezia and Nampula are the most populous provinces. Average life expectancy at birth is 58 years in 2016 (it has risen from 45 years in 1995) and total fertility rate is 5.1 children born/woman (2017 estimates) (The World Bank, 2018a). About 70% of the population lives in rural areas (Figure 5) with a big majority engaged in agriculture (main occupation for 76.3% of the women and 55.9% of men) or working in informal sector trading (10.5% of women and 8.7% of men) (Instituto Nacional de Estatística, 2015).



Figure 5. Rural area of Cabo Delgado province, northern area of Mozambique. Own photo.

Mozambique's major ethnic groups encompass numerous subgroups with diverse languages, dialects, cultures and histories. The Makua are a dominant group in the northern region, the Sena and Ndaou are prominent in the Zambezi Valley and the Shangaan (Tsonga) dominate in the southern area of Mozambique. Other groups include Makonde, Yao, Chopi, Shona, Ronga and Nguni. The most spoken national languages are Emakhuwa (25.4%), Portuguese – the official language (12.8%), Xichangana (10.4%), Cisená (7.1%), Elomwe (6.9%) and Cinyanja (5.8%). According to the last available census, 20–30% of the population is Christian (mostly Catholic); 15–20% adheres to Islam and the remainder adheres to traditional beliefs (Instituto Nacional de Estatística, 2018).

Ndege (2007) identified significant variation patterns in behavioural and social norms within the country's 16 major ethnic groups regarding type of descent system (matrilineal or patrilineal),

and age at marriage. In the north and centre matrilineal⁷ descent systems predominate, whereas in the south patrilineal descent is the norm. Contrary to other SSA countries, matrilineal societies averaged earlier ages for marriage (15-17 years old) and patrilineal societies had a slightly higher average age at marriage (18-21 years). Education might be a mitigating factor, as matrilineal systems in the rural northern regions had high female illiteracy rates (85%-88%). The southern provinces, where patrilineal descent is common, had lower rates of illiteracy (48%-77%) and greater access to radio, television, newspapers and health information (Arnaldo, 2004; Audet *et al.*, 2010).

From a socioeconomic point of view, it has similar characteristics to other countries in SSA. Since the mid-1990s, it has achieved rapid growth in real gross domestic product (GDP), averaging around 7% per year. Economic growth has brought reductions in poverty levels, but not at the same pace as in aggregate GDP – e.g., the official poverty rate fell from 68% in 1996/97 to 53% in 2002/03, but up to 2014/15 only declined to 46% (MEF, 2016). Multidimensional poverty⁸ – which, arguably, better considers the provision of public goods and services – has fallen somewhat more consistently (from 77% in 1996/96 to 45% in 2014/15). At the same time, regional disparities in socio-economic conditions are large and persistent. As of 2014/15, multidimensional poverty rates were as high as 57% for the population in the North of the country, versus just 14% in the South (MEF, 2016).

The country, despite improvements, still has one of the highest maternal mortality rates in the world (489 deaths per 100,000 newborns) (World Health Organization, 2015b) and continues to be a major recipient of health aid (IHME, 2016).

⁷ It is important to remark that FRELIMO promoted patriliney, not explicit but as a product of their general policy which centered on the promotion of the nuclear family (Arnfred, 2011).

⁸ Multidimensional poverty includes six indicators evaluated at the household level, they are: completion of primary school, access to safe water, access to quality sanitation, grass roofing, access to electricity, ownership of most common durable goods.

Currently, communicable diseases are the leading causes of death in Mozambique: malaria (29% of all deaths), HIV/AIDS (27%), perinatal conditions (6%), diarrhoeal diseases (4%) and lower respiratory infections (4%) (World Health Organization, 2016c). Large differences in mortality also exist across urban and rural locations. Malaria was the leading cause of death in rural zones and HIV/AIDS was the leading cause of death in urban zones (Instituto Nacional de Estatística, 2015). Moreover, chronic malnutrition remains a common health condition, affecting 43% of under-fives.

3.2. Health policies and the health system of Mozambique

Mozambique Independence was in 1975 and three years later (1978), following the Alma Ata conference declaration, Mozambique adopted the policy, principles and components of PHC (Lindelov *et al.*, 2004) and the provision of free health services was the main legally present characteristic.

In the 80s and 90s, Mozambique went through deep social, economic and political changes. In 1989, 12 years after the beginning of the civil war, and after two donor strikes in 1983 and 1986 when food aid was withheld (Hanlon, 2004), the ruling party, the Front for the Liberation of Mozambique (FRELIMO) formally abandoned Marxism. Under the pressures of International Monetary Fund (IMF) and World Bank (WB), in 1987, Mozambique signed the SAP and, in 1990, a new constitution provided multiparty elections that brought a transition to a market-oriented economy with reductions in government spending and privatisation of some services. The continued increase of foreign aid after SAP turned Mozambique into one of the major recipients of health aid in Africa nowadays (IHME, 2016) and the wide range of actors in the health sector - multilateral organization, bilateral donors, NGOs, foundations or universities - has led to fragmentation inside the sector through uncoordinated foreign aid flows and competing donor interests.

By the mid-90s, the governability of Mozambique was weak, the State budget on health very scarce and a significant number of health care facilities destroyed in the context of a civil war, mainly in the rural areas. Also, the prevailing political and economic neoliberal climate introduced important negative changes for the effective functioning of the public system, for example, in 1996 the salaries of the civil servants were only one-third of what they had been in 1991.

During the following years, the big majority of the Mozambicans were using a weakened public health care system with very limited resources (World Health Organization, 2016c). The predominant rhetoric regarding the public welfare, promoted in a context of scarce public funds and international and often much conditioned aid dependency, has placed additional hurdles on the possibility to develop a minimum comprehensive approach of the public health care system (Mackintosh, 2000).

The current health care system in Mozambique is weak and quite similar to the majority of SSA countries. For example, national representative data for Mozambique shows that only 34% of facilities had the three basic infrastructure equipment: clean water, sanitation and electricity (The World Bank, 2015a). Also, a limited 42.7% of the health facilities had available the priority drugs (The World Bank, 2015a). The health care system also suffers from having a weak specialized level with an important presence of private providers and fragmentation between organization and service delivery, a common source of inefficiency.

The Constitution of Mozambique endows all citizens with the right to health (art. 89) and the Ministerial Decree 127/2002 of 31 July sets the Mozambican organization of health care in four levels of care and 11 types of health facilities. Primary and secondary levels are oriented to the provision of primary care with basic preventive and curative health, including surgical services in some basic hospitals. The provincial hospitals constitute the tertiary level and four central hospitals are the quaternary level (Direcção de planificação e cooperação, 2015). Also, private clinics and hospitals

provide healthcare and their presence vary between urban and rural areas. Additionally, almost 70% of the population in Mozambique seeks care in the traditional medicine for physical or psychological concerns, and the estimated ratio is 1 traditional practitioner per 200 inhabitants (Ministério da Saúde, 2012).

Governance

In Mozambique, the health sector is made up of Ministry of Health of Mozambique (MoH), 11 Provincial Directorates of Health (DPS) and 146 District Services of Health, Women and Social Affairs (SDSMAS) but also other health institutions receive autonomous budget allocation from the State Budget. These are: Centre of Medicines and Medical Articles (CMAM), National Council for the Fight Against HIV/AIDS (CNCS) and also, three Central Hospitals, four General Hospitals, eight Provincial Hospitals, one District Hospital, and one Psychiatric Hospital. DPS and SDSMAS are subordinated to MoH.

Main planning instruments

The health sector has multiple plans and their alignment is slowly improving over the years. The current main plans can be divided into two types: 1) multi-sectoral plans, which are the government's five-year plan (PQG), the Medium Term Fiscal Framework (CFMP) and the Economic and Social Plan (PES); and 2) the health sector strategic plan (PESS). However, as described in detail below, a significant amount of resources in the health sector are channelled outside of the Single Treasury Account (off-budget expenditure) through donor financed projects, thus outside the national planning framework.

The PQG (in Portuguese “Planos Quinquenais de Desenvolvimento”) is a medium-term plan linked to the electoral cycle and it includes a series of strategic objectives, some of them related to health, to be achieved in the next five years. The current

plan is from 2015 to 2019. The main priorities can be summarized as follows: promote equal access to health services, reduce disease impact, health promotion and disease prevention, improve the sanitation network, improve human resource management and ensure sustainability and financial management (The World Bank, 2014). The indicators to measure progress in the PQG are presented in Table 3.

Table 3. Indicators to measure progress in the PQG (2015-2019)

Indicator	Baseline (2014)	Expected (2019)
Institutional deliveries (%)	71	75
Fully vaccinated children (%)	82	94
Cured underweight in children under five (%)	60	80
Adults and children retained on ART (%)	45/64	80/80
HIV+ pregnant women who received ARVs (%)	86	90
Health professionals rate (per 100,000 inhabitants)	94	113.3
Number of districts with a district hospital	44	60
Women aged 30-55 years with cervical cancer screening in family planning consultations	1	15

Source: Ministério da Saúde (2015)

The CFMP is the medium-term estimation of revenues and expenditures. The current CFMP 2017-2019 is subordinated to the PQG 2015-2019. The resources are budgeted through CFMP which is negotiated with the Council of Ministers and Ministry of Economy and Finance and approved by the Parliament. The CFMP contains a general description of the projected expenditure in the health sector and points out three actions to specifically reduce maternal and neonatal mortality: to increase the institutional deliveries, to reinforce de intermittent preventive treatment in

pregnant women at risk of malaria and the distribution of mosquito nets (Ministério da Saúde, 2015).

The PES provides an operational plan for activities to be undertaken under each program in the PQG within a year. The priorities in health for 2018 are: maternal and child health care, improve quality of care, improve medical products logistics, reduce the impact of epidemics and malnutrition, health promotion and disease prevention, and increase human resource for health. However, while the PES and the health budget are both produced on an annual basis, it is challenging to assess how the budget is linked to policy objectives.

The current strategic policy framework of the health care system is the PESS 2014-2019 that establishes two pillars. On one side, to have more and better health services having as general principles the access, utilization, quality, equity and efficiency. On the other side, health sector reform agenda based on six general components: health services, health infrastructure, leadership and governance, health financing, human resources, logistics and health technology and, the last one, health information, monitoring and evaluation (Ministério da Saúde, 2013a).

Health policies

The current national health policy highlights the health as a good and essential precondition for the sustainable development of the country. In general terms, it includes access to the public health care and the assurance of referral between levels of care. Also, it describes the interaction with the community sector with traditional birth attendants and community health workers, particularly in remote areas. However, the policy provides a weak framework for the development of the National Health Service (NHS) and it recognizes the role of private sector in providing health care to citizens (Ministerio da Saúde, Conselho de Ministros).

The NHS was created by law (25/91) and it was defined as the set of health facilities, including those that were nationalized,

that depend on the MoH and contribute to the provision of health care to the population. On paper, the NHS develops preventive actions, assistance actions and rehabilitation actions, using training and research as a means for its continued development.

Since 2001, Mozambique has begun the process of decentralization of the public services, including the health sector, but it has been very little developed. The law guiding the process is the Law for Local State Bodies (LOLE) (Law 8/2003) which provides clarification of the administrative roles and responsibilities of deconcentrated bodies (Provincial, Districtal, Administrative Posts, Localities and Population). Moreover, it creates new services at district level and give districts autonomy to plan, budget and implement local initiatives. Also, it sets up channels for community participation and consultation in local governance.

Also, Ministerial Diploma No 67/2009 of 17th of April, approved the guidance on the organization and functioning of Local Advisory Councils (Conselhos Consultivos Locais) to ensure the participation of local communities in the process of planning and implementing district development plans. It also recognizes that the community participation process is through the Local Councils at the levels of: district, Administrative post, Localities and population. Under this Ministerial Diploma, community involvement in the planning and implementation of district development plans should begin at the grassroots level, i.e. communities should participate by identifying the real collective needs and incorporating them into the plans of each district. This exercise must be guaranteed through the active participation of the citizen in said process.

However, many challenges arise in the formulation and implementation of these policies and strategic plans. Regarding policy formulation, there is a scarce control over policy formulation and planning of vertical programmes, the weak engagement of other stakeholders in policy formulation, the fragmentation between policy and strategic plan development processes and the existence of outdated and obsolete laws. Also, regarding strategic planning

capacity some of the drawbacks are the existence of many parallel data information systems, the weak investment in evidence generation and use of this evidence, as well as the limited collaboration between MoH and other national bodies.

Health Care Financing

The Mozambican Government health expenditure as a percentage of general Government expenditure is 9.8% (UNICEF, 2016) still far from reaching the Abuja Declaration target of 15%. Also, total health expenditure (THE) per capita is US\$42, it is lower compared to the WHO recommendation of US\$60 and it is heavily dependent on foreign assistance (The World Bank, 2018a).

The health sector is financed by the state budget and external funds from donors and, in a small portion, by the contribution of OOPs. Taxes and own revenues fund the state budget but, it is important to mention the restrictions imposed on public spending through austerity measures. The external funds are contributed by donors through General Budget Support, the health common fund (ProSaude), the vertical funds and in a very small proportion by donations of medicines and medical equipment.

Financial resources in Mozambique can be reported to the State (on-budget) or not reported (off-budget), also it can be *on* Government financial system (Conta Única do Tesouro “CUT”) or *off* the system (off-CUT). Spending financed by State budget and ProSaude is on-budget and on-CUT while most of the vertical funding is off-budget and off-CUT challenging the accountability to the Parliament of Mozambique and to public planning and budgeting of the MoH.

A key issue is that most of the health spending is external and outside of the boundaries of the Government control. In 2013, the state budget only contributed 29% to healthcare spending, ProSaude 7% and the vertical funds 64%. It is important to highlight that 62% of the overall health spending in Mozambique, basically the vertical funds, was not managed by the Government

neither recorded in the MEF nor audited by the Administrative Court (off-budget and off-CUT). THE has risen in real terms between 2009 and 2013 mainly because of the vertical funds, while ProSaude has also declined in its contributions and the state budget seems to compensate the decline, showing a slight rise of three percentage points (The World Bank, 2015b).

Regarding the contribution of OOPs, it corresponds to 6.4% of THE in 2014 (The World Bank, 2018a). In this sense, despite the fact that WHO placed Mozambique as the country with lowest annual OOPs household spending on health in the world (World Health Organization, 2014), the 2014/2015 direct payments on average represent a 312.59% increase in real terms when compared to 2008/09 (Instituto Nacional de Estatística, 2015).

According to the PESS, the health sector financing strategy is being developed taking into account four dimensions: collection of funds, pooling of funds, purchasing mechanisms, and resource allocation.

Collection of funds

As pointed above, the levels of expenditure in health as percentage of Government expenditure in Mozambique are lower than its peer countries and far from the Abuja target. Annual variation of funds allocation to health reached its highest percentage in 2005 (18.24% of Government expenditure) and since then it maintained a decreasing tendency with 8.81% of Government expenditure in 2014 (The World Bank, 2018a). These figures include external loans, donations, compulsory health insurance funds and the recurrent and capital spending from government budget, but, it is important to mention that 65% of the overall Government budget in 2014 was financed by external sources. It showed a sharp increase in 2015, where 75% of the overall government budget was funded by donors (Health Policy Project, 2016). In fact, Mozambique is one of the major recipients of health aid in Africa (IHME, 2016).

An increase in the domestic revenue mobilization is needed to achieve an autonomous and sustainable health financing. In Mozambique, The health financing strategy technical working group (GTF) - supported by WHO, EU and the Government of Luxembourg - are considering the following strategies: an increase in the user charge, different financing schemes (social health insurance, community based health insurance and private health insurance) as well as other regulations and oil revenues for health. Debt relief, as a mechanism to increase public budget, is not under consideration (Health Financing Strategy Technical Working Group, 2016).

Pooling of the funds

Pooling of prepaid revenues (taxation and the various forms of health insurance) have a big impact on financial risk protection and access to care. This include decisions on benefit coverage and entitlement that, nowadays, are generally guided by neoliberal policies, for example, the World Bank continue to emphasize multi-tiered health care financing: private health insurance for the rich, social health insurance for the middle and publicly funded “benefit packages” for the poor.

However, there is large evidence that “multiple pools, each with their own administrations and information systems, are also inefficient and make it difficult to achieve equity. Usually, one of the pools will provide high benefits to relatively wealthy people, who will not want to cross-subsidize the costs of poorer, less healthy people” (World Health Organization, 2010). In the case of Mozambique, the GTF is considering the definition of a “Benefit Package” and, as said before, the definition of different financing schemes that range from community-based to private health insurance. This debate around UHC and what should be provided or not, fray social solidarity and weaken political support for single pool single payer system.

Purchasing mechanisms

The Government of Mozambique is the largest purchaser of healthcare services, other purchasers are development partners, voluntary schemes of payment and direct payments. Current purchasing mechanisms in the Mozambican NHS are mainly based on line-item budget where salary, supplies, transportation or drugs costs are calculated mainly based on historical budgets defined by MEF. Regarding fee-for-service, few institutions are authorized, one of them is Central Hospital of Maputo (private section). However, it is known that many informal practices occur at the health facility level.

Resource allocation

In 2016, MoH received the highest allocation as a share of total government health funds (45.2%), followed by SDSMAS (14.9%) and DPS (13.5%). The following single institution in receiving funds is Maputo Central Hospital (8.6% of budget allocation) (UNICEF, 2016). The current allocation process of the Government lacks of necessary data and it sometimes suffer from poor quality. Also, the process is patchy, often poor, with regard to off-budget off-CUT funds. For example, the allocation process of US Government (one of the major donors) in Mozambique does not help to increase the efficiency, it has been in the form of “sub-agreements” with health providers thus linking donor priority activities with funding. These deficiencies are explicit when analysing the inequitable distribution of the per capita sub-national health allocations to provinces, Maputo City receives MT 529 (US\$ 11), while Nampula receives MT 222 (US\$ 5), Maputo Province receives MT 252 (US\$ 5), and Zambézia receives MT 257 (US\$ 5) (UNICEF, 2016).

Salaries and personnel costs are paid by the State budget though ProSaude, among other actors, funded personnel expenses paying base salaries (8 to 12 month) to new graduates hired by

NHS. Vertical funds (mostly PEPFAR) contributed a third to the personnel expenses, this personnel is not paid by the state budget (The World Bank, 2015b).

Health care providers, human resources and essential health products

The health care system in Mozambique is predominantly publicly provided with some exceptions as the HIV/AIDS program that remains essentially sustained by external assistance⁹ and provided by public and NGOs, its spending showed a 37% increase from 2012 to 2014 (US\$256 million to US\$353 million) (UNAIDS, 2014). Also, some private health care system is growing particularly in large cities (Maputo and Matola among other provincial capitals).

Health care providers

The public health facilities are located in the main towns and villages around the district health facility of reference, which can be a Hospital (district or rural) or a Type I health facility with notable geographical inequalities in their distribution between urban and rural areas as well as the regions of the country (Figure 6). It is organized into four levels of care (primary, secondary, tertiary and quaternary) where the primary and secondary levels oriented to the provision of PHC. The definition of the health facilities is based on the size of the catchment areas but ruled by an outdated Decree 127/2002.

The primary level comprises 161 health posts and 1,271 health facilities providing basic preventive and curative health services. The secondary level includes 47 basic hospitals such as rural, district and general hospitals, some of them providing surgical services. The seven provincial hospitals constitute the tertiary level and the three central hospitals constitute the quaternary level

⁹ In 2011, international resources represented about 95% of overall expenditure for HIV in the country.

(Ministério da Saúde, 2013b). However, it is well known that the expansion of the health care system has been slower compared to the population growth, the current ratio is 16,739 inhabitants per facility and it is far from the Poverty Reduction Action Plan (PARP) target of 10,000 inhabitants per health unit (Ministerio da Saúde, 2016). If we consider the provinces, Nampula (23,297), Tete (20,805) and Zambézia (20,178) have the worst ratios (Ministerio da Saúde, 2016).

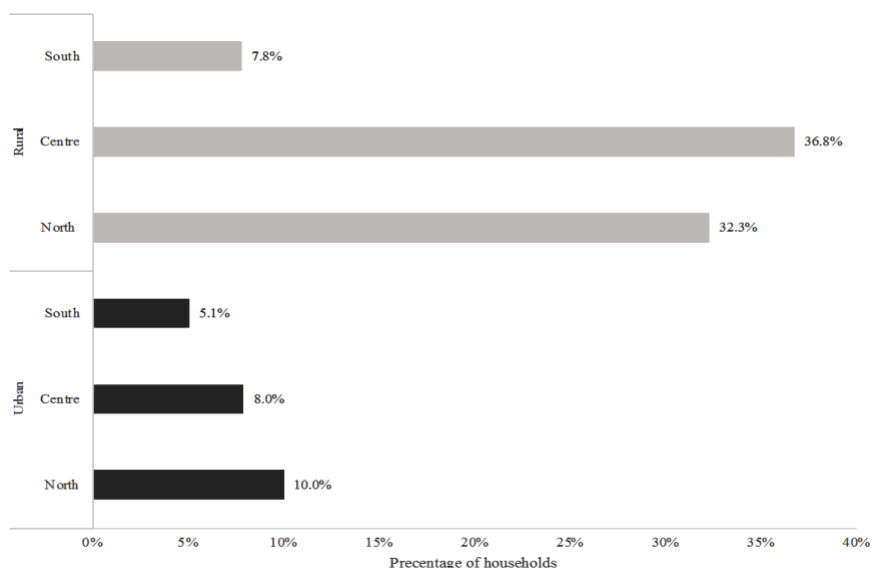


Figure 6. Percentage of households that needs more than 30 minutes to reach the health facility. Source: Instituto Nacional de Estatística (2015)

Private health care providers are proliferating particularly in large cities, some of which are unregulated, offering fee-for-service health care. However, data on its performance is not publicly available. Weimer (2008) classified the clinics of Mozambique in five categories: 1) private clinics whose owners are linked to the elite; 2) private sections in public hospitals (“clínicas especiais”) with preferential access to medical services, physicians and equipment; 3) rooms and special services in public hospitals, negotiated privately with health personnel; 4) the standard public

health care services for general population; and 5) informal private doctors and 'service providers' linked to drug supply chains and with basic medical knowledge, also belonging to this group practitioners and suppliers of 'traditional Chinese medicine and Chinese drugs'.

Human resources for health

The human resources for health are the cornerstone in stimulating, creating and maintaining health care improvement. In Mozambique, according to the Ministry of Health, the health professionals have grown 72% between 2007 and 2015 (Ministerio da Saúde, 2016). It represents 25,779 health professionals (53.8% are women), of whom 12,085 are general nurses or maternal and child health nurses. However, the ratio of medical doctors and nurses is very low (54.8 per 100,000 inhabitants) compared to the 230 per 100,000 inhabitants recommended by the WHO and the education of half of the personnel working in the health facilities is the lowest level attainable (Ministério da Saúde, 2010). Furthermore, the distribution is very unequal, Zambézia and Tete have the least health professionals and the inequities between provinces worsened in 8 out of 11 provinces between 2007 and 2015. Regarding urban/rural distribution, in urban areas there are 176 health professionals per 100,000 inhabitants compared to 65 in rural areas (Ministerio da Saúde, 2016). 53.8% of the total national human resources for health are women.

The lack of health professionals has been tried to overcome with the community health workers (in Portuguese, Agente Polivalente de Saúde, APE) which are integrated in the health system as unpaid or low paid workers. 25% of the APEs are concentrated in Nampula province, followed by Sofala (13.9%), Cabo Delgado (13.8%) and Inhambane (10.4%) (Ministério da Saúde, 2014). The distribution of APEs in Mozambique by sex is different from other countries where it is mainly based in the work of women. In Mozambique, the distribution of APEs in northern

and central areas is mainly comprised by men and the southern area is mainly women (Ministério da Saúde, 2014).

Essential health products

Also, there is information about the existence of shortages of essential health products such as drugs and health technology that affects the majority of the households that are far from the district capital (Wagenaar *et al.*, 2014). Additionally, the availability of basic emergency obstetric units is very limited in the country taking into account the high fertility rates of the country; it is 2.2 units for every 500,000 inhabitants (Ministério da Saúde, 2013a).

4. Theoretical framework of the thesis

This section is divided into four subsections. First, a short reminder of the WHO's Commission on Social Determinants of Health (CSDH) conceptual framework is reviewed. Second, an explanation of the framework for the study of access. Third, an introduction to the determinants of socioeconomic inequalities in access and quality of health care services. Fourth, a description of the political and socio-economic context that favours the presence of these inequalities.

4.1. Social determinants of health

As mentioned above, the WHO's conceptual framework of SDH distinguish between: a) the economic and political institutions and decisions that create and perpetuate economic and social privilege, named the structural determinants of health; and b) the social factors that influence health, labelled as intermediary determinants of health (CSDH, 2008) (see Figure 1).

For this thesis, the most relevant premise is that the socioeconomic and political context affects the distribution of resources as well as the position individuals or groups hold within

societies, which at the same time has an effect on the unequal relations that individuals with different social position will have. For example, to access the health care services or other basic services. Collectively, this results in inequities in the health and wellbeing of the population.

Key elements of the structural determinants are: governance patterns; macroeconomic policies; social policies; and public policies in other relevant sectors. These elements are part of a given distribution of power, prestige and access to material resources in a society, and thus, of the pattern of social stratification and social class relations existing in that society (Solar and Irwin, 2010) (see Figure 1). Western studies have frequently evaluated socioeconomic position using income, occupation or education. In Mozambique, 70% of the population lives in rural areas where most of the citizens are engaged in subsistence agriculture or informal sector trading. In this context, non-monetary socio-economic measures would better reflect long-run household wealth and living conditions. Housing and its related characteristics often represent the single largest category of investments in durable assets made by individuals over the course of their lifetimes. Additionally, significant efforts have been made to increase citizen's access to public education, although notorious differences persist between sexes, provinces or geographical areas, especially concerning the enrolment in secondary education (Instituto Nacional de Estatística, 2015). Also, as stated before gender, age, and territory are strongly related to the domains of prestige and discrimination (Solar and Irwin, 2010).

The CSDH model proposes that socio-economic context directly affects intermediary factors (e.g. through kind, magnitude and availability). These factors include: material circumstances (such as, neighbourhood, working and housing conditions); psychosocial circumstances, and also behavioural and biological factors. The model assumes that population of disadvantaged socioeconomic groups lives in less favourable material circumstances and engage more frequently in health-damaging behaviours. Also, health system is included as an intermediate

determinant and the model recognize the capacity of the health system to influence the determinants (see Figure 1).

4.2. Framework for the study of access to quality care

Access to health care can be defined in different ways. One of the most extensively used models in the study of the access to health care is the Model of Aday and Andersen (1974) (Figure 7).

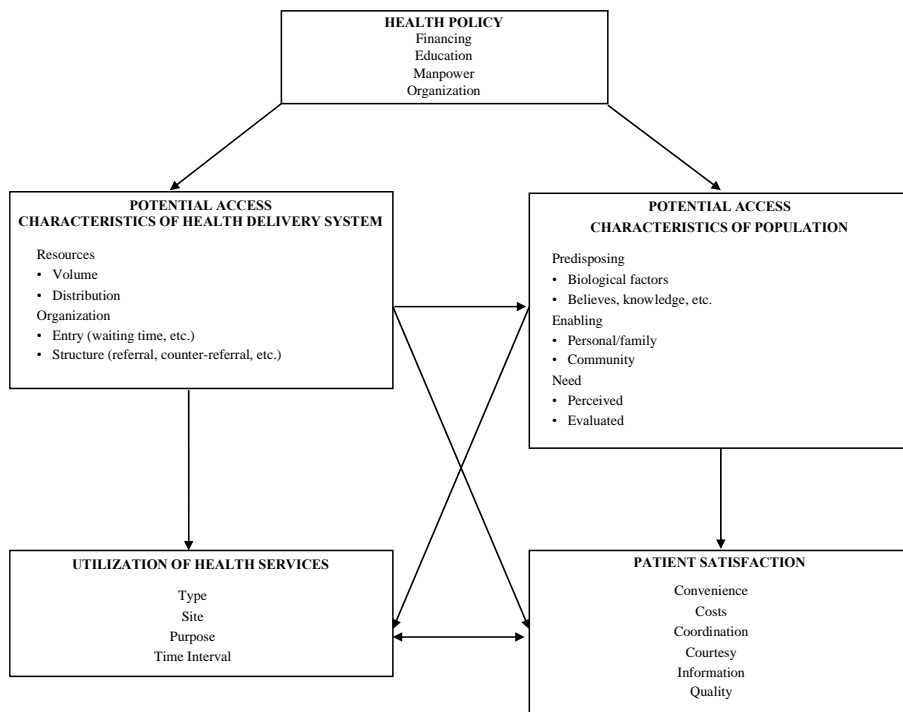


Figure 7. Framework for the study of access. Source: Aday and Andersen (1974)

The model has been reviewed along the time (Andersen, 1995, 2008), but its two main characteristics are the following: 1) the access is understood as equal to utilization; and 2) a distinction is drawn between potential access and actual access. The potential access refers to the availability of the health care resources, the geographical and financial accessibility, and whether it is acceptable by the population. The actual access integrates the real

contact between the provider of the service and the user (utilization), but the use of the service does not imply a satisfactory or “effective” service and does not guarantee a successful access to the health care system, especially for future contacts.

As presented in Figure 7, the model have five components: health policy, characteristics of health system, characteristics of the population, utilization of the health services and satisfaction (Aday and Andersen, 1974). However, for the purpose of this thesis, we only make use of the last three: characteristics of the population, the utilization of the health services and the patient satisfaction because we also use the SDH model that is more focused on inequalities for the contextual part.

The characteristics of the population can be classified into predisposing characteristics, enabling and need for the health services. Predisposing factors are those characteristics such as age or sex that represent biological imperatives of the likelihood that the population will need health care, e.g., health problems increase with age and older people may use more the health care due to these health problems. Predisposing factors are also attitudes, values and knowledge towards health and healthcare and their perceptions about their own needs and subsequent use of the services. For example, a study by Munguambe *et al.* (2016) in Mozambique describes that pregnant women view the health facility as the appropriate place to seek care during pregnancy and delivery, and despite traditional medicine is generally available to the community they were not regularly used during pregnancy. However, fear of being mistreated during labour was recurrent among pregnant women (Munguambe *et al.*, 2016). Enabling factors are those that allow an adequate access to the services. Among these factors, life and socioeconomic conditions have a significant weight. For example, women's decision to seek health care may be conditioned by the marriage, number of children and their socioeconomic situation (Johnson *et al.*, 2012). The need for health care is the last component of the characteristics of the population. The need would

be perceived or professionally defined, and it is the most immediate cause of use of health services (Aday and Andersen, 1974).

The utilization of the health services refers to the type, site, purpose and time interval. The type of utilization is who provided it (i.e. health post, hospital, pharmacist, traditional medicine, etc.). The site is the space where the encounter happens, for example, emergency room, delivery room, etc. The purpose of the visit means whether the visit was related to preventive care or illness-related. Lastly, the time interval refers to whether or not a patient enters the health system in a given period of time (Aday and Andersen, 1974).

Patient satisfaction refers to the attitudes towards the medical system of those who have contacted it. Dimensions of satisfactions are convenience, costs, coordination, courtesy, information and quality (Aday and Andersen, 1974).

Traditionally, quality of care has been evaluated following models such as the Donabedian (1988) which distinguish between structure, process and outcome. Structure refers to the settings where the process of care occurs, process of giving and receiving care and outcome as the effects of the care on the health status. The recent review more adapted to low and middle income context of Kruk *et al.* (2018) highlights that high quality care should be judged primarily on their impacts “including better health and its equitable distribution; on the confidence of people in their health system; and on their economic benefit, and processes of care, consisting of competent care and positive user experience.”

4.3. Determinants of socioeconomic inequalities in the access to quality care

People’s access to, experiences of, and benefits from health care are linked to their social class, gender, race/ethnicity, and place of residence. Evidence suggests that certain socially excluded groups tend to use health services less, although these groups may need health services more (Tudor Hart, 1971). Gender is an axis of inequality, and as Buor (2004) shows, despite women have worse

health conditions, they use health care less than what corresponds by need, and distance and income have a higher impact on the women's utilization of the health services. This indicates that the determinants of the use may vary between women and men, that is why we will take both gender into consideration separately.

4.4. Structural determinants of the access to quality care

The structural determinants of health have an impact in the access to and quality of the health care. It is well known that the austerity measures, grounded in macroeconomic policies, have strongly influenced the reforms in the health sector in ways that undermine the contribution to a more effective and equitable distribution of health care among the population (Beste and Pfeiffer, 2016), and despite evidence shows that health systems that are based in PHC are associated with a more equitable distribution of health in populations (Starfield *et al.*, 2005), the current health system in countries like Mozambique is mostly based on vertical programmes (i.e. Malaria, HIV and TB) and selected health services offered to population subgroups such as, maternal and child care. Also, the public and private share of health care financing, and the reliance on OOPs depend on the political character of a country (Calikoglu, 2009). For example, some governments in SSA countries have taken action by removing fully or partially user fees in the health sector (Meessen *et al.*, 2011). Finally, the pressures from political interest groups, the industry, transnational organizations and/or private sector also need to be considered when analysing the health care system, nonetheless, these factors are not always explicit, and, in general, data is unavailable to measure their influence on the current state of the health system.

II. JUSTIFICATION

Research have shown that stark health inequalities exist between and within countries but the literature is mainly based on the Western research experience (Cash-Gibson *et al.*, 2018). SDH in SSA countries, which face the worse health problems, remain largely unexplored. For decades, mainstream development models have focused in the provision of basic goods and services (Cueto, 2004; Irwin and Scali, 2007) and this has had an influence in the prevailing health policy models that focused on the provision of access to health care targeting specific populations with high burden of diseases and deaths, such as HIV positive, children and women of childbearing age. This is reflected in the literature production but, with the exception of Ataguba *et al.* (2015) for South Africa, no studies have taken a comprehensive view of the SDH in SSA.

Although many policies, financing and health interventions have put extra emphasis on increasing the access to the health care, the lack of universal access still remains a major public health challenge in the big majority of SSA countries. Despite not being the main SDH, health care inequalities in the access and quality of care increase the burden of disease, widen social inequities in health and generate poverty (Whitehead and Dahlgren, 2007). Additionally, health is a fundamental human right, thus, health care should be universally accessible and of adequate quality. Having a comprehensive health care system based in PHC has clearly shown that, in comparison to specialized health care, is associated with a more equitable distribution of health in populations, a finding that holds consistency in both cross-national and within-national studies (Starfield *et al.*, 2005). However, very few articles in SSA have reviewed the scientific literature on the equity in the health care, and no comprehensive reviews are currently available on this matter.

Overall, in SSA a very limited sample of six articles have analysed the access to care taking a comprehensive view of the

health system, rather than a selective one. Of these studies, three analysed the access to care for urban area of Ethiopia (Begashaw *et al.*, 2016), DRC (Chenge *et al.*, 2014) and Kenya (Taffa *et al.*, 2005) and they did not find significant differences by wealth and educational attainment for people with same health need. Yet, the samples were very limited in number and they only analysed urban areas. Another study in the Ashanti region of Ghana found a higher utilization for those with more wealth and higher educational attainment when analysing PHC together with other levels of care and disaggregated by sex (Buor, 2004). Finally, two studies that disaggregated the analysis for PHC using a national representative survey, found pro-poor utilization in Zambia (Phiri and Ataguba, 2014) and South Africa (Zere and McIntyre, 2003b). These inconclusive results may reflect the heterogeneity of the populations and the determinants of access in the SSA which may be different for the case of Mozambique.

The focus on increasing the access to care have propitiated a lack of proper attention to the quality of the care provided to the population. Despite poor quality of care is a cause of death in low and middle income countries (Kruk *et al.*, 2018), a scarce number of studies have empirically evaluated the quality of the health services and they mostly focused on the maternal services (Lee *et al.*, 2016; Larson *et al.*, 2017; Sharma *et al.*, 2017).

Mozambique represents an interesting case study because despite population's health has improved over the years, the current average life expectancy at birth is 58 years in 2016 (The World Bank, 2018a), it ranks 181st out of 188 countries in the Human Development Index 2016 and is a major recipient of health aid. The Constitution endows all citizens with the right to health but the focus of national health policies mainly remains on the provision of health care services. In Mozambique, Lindelow (2005) analysed the determinants of services utilization. Other studies have analysed the use of health services in a specific geographical area for children under 5 (Nhampossa *et al.*, 2013), while others have followed up behaviours of health care seeking (Salvucci, 2014; Anselmi *et al.*,

2015), and yet others have analysed specific aspects of the healthcare system such as geographical accessibility (dos Anjos and Cabral, 2016), waiting times (Wagenaar *et al.*, 2016) or medicine stock-outs (Wagenaar *et al.*, 2014). Two studies have further analysed the equity in the utilization of selected health services: Yao *et al.* (2014) showed a higher use of HIV testing by those with higher educational attainment and household wealth, and Bayham *et al.* (2017) found similar results for three common children diseases. To our knowledge, there are no up-to-date comprehensive epidemiological studies analysing inequalities in the access to and quality of health care services derived from population-based surveys.

The present thesis will fill these gaps. It aims to give a critical overview of the health care and health inequalities with a focus on the Mozambican case. First, we analyse the role of the SDH in Mozambique and the subsequent health inequalities. Second, we investigate the health care inequalities by systematically reviewing the literature on equity in the access to and quality of PHC for the SSA region, and empirically appraising the health care inequalities for the Mozambican case. And third, we present a data source mapping of the health information available in Mozambique to tackle health inequalities.

Currently, Mozambique has undergone a process of health sector reform, thus this timely thesis may help in providing up-to-date knowledge on the current state of the health care and health inequalities as well as provide insight for future decisions regarding new or improved interventions in order to tackle health inequalities and to increase equitable access to quality care in the country.

III. HYPOTHESIS AND OBJECTIVES

1. Research questions and hypothesis

This thesis seeks to investigate the following hypothesis and research questions:

- In Mozambique, health inequalities are maintained for the period 2002-2014.
- Intermediate social determinants can largely be traced back to structural determinants in Mozambique for the period 2002-2014.
- In Mozambique, the relevance of intermediate factors declines when structural factors are studied for the period 2002-2014.
- Currently, in Mozambique there are socioeconomic inequalities in the use and quality of health care services.
- Do people who have the same health needs, receive equal access to PHC, regardless of their social group (e.g. income, education, gender, age, ethnicity/race or place of residence)?
- Do people who access PHC, received equal quality of PHC, regardless of their social group?
- Are there gaps in the health information system to monitor health inequalities in Mozambique?

2. Objectives

The following objectives were formulated to contrast the hypothesis and questions stated above:

General objective:

To analyse the SDH and health care inequalities with a focus on Mozambique.

Specific objectives:

- To determine the SDH in Mozambique and their evolution for the period 2002-2014.
- To systematically review the scientific literature on equity in the access to and quality of PHC in the SSA region.
- To analyse the current inequalities in the access to and quality of care in Mozambique.
- To assess the current capacity of the health information system to monitor health inequalities using Mozambique as a case study.

IV. METHODS

This thesis uses different methods for addressing the objective of each study.

1. Quantitative studies

The empirical articles (articles 1 and 3) of this dissertation are based on data from the Mozambican Household Budget Survey. The data analyses and the description of the variables used in each article are discussed in detail on the research papers and are not repeated in this chapter.

1.1. Household Budget Survey

The Household Budget Survey (HBS) is a periodic survey (2002/3, 2008/9 and 2014/15) conducted by the National Institute of Statistics of Mozambique that provide consistent and homogeneous information over time of a sample of the Mozambican population. The data is representative at national, regional (North, Centre and South), provincial and urban/rural levels (Instituto Nacional de Estatística, 2015).

The surveys apply probability sampling following a three-level multistage stratified sampling technique: selection of strata (provinces), selection of enumeration areas within each strata, and selection of the households within each enumeration area. The person designated for responding to the survey in each unit is the head of the household. The final sample of households included in the analyses consist of $n = 43,869$ (HBS 2002/3), $n = 51,114$ (HBS 2008/9) and $n = 163,448$ (HBS 2014/15). The HBS 2014/15 has a larger size because the same households were visited in three different occasions between 2014 and 2015, the visit of the first trimester of HBS 2014/15 gathered information from 58,121 individuals. A high response rate was achieved in each survey.

The HBS questionnaire includes a wide variety of information on socio-economic characteristics of individuals and households such as home consumption, durable assets and housing quality of their dwelling, among others. The HBS also contains a detailed health section on recent sickness, the choice of health care providers, and perceived quality of the care received. Moreover, comprehensive information on distance to basic services is available (e.g., distance to health care units).

2. Systematic review

The article 2 is a systematic review of the equity in the access to and quality of PHC in the SSA region. This systematic review summarises the results of available scientific studies and provide high level of evidence on this topic. We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) as further explained in the study. Quality controls were: selection of articles that followed a rigorous methodology, triangulation of researchers in cases of uncertainty and participation of experienced researchers in the interpretation of the results.

3. Data source mapping

The article 4 consists of a systematic mapping of the databases that provide information for health equity monitoring. Data source mapping “involves cataloguing and describing all data sources available for a given country (or province, district or other administrative unit) to determine which sources can be used for health inequality monitoring” (World Health Organization, 2013c; Hosseinpoor *et al.*, 2018b). Data source mapping consists of four steps. First, selection of the indicators to measure health inequalities. Second, selection of relevant data sources available, this include national-level data from institution-based and population-based. Third, a search of the available equity stratifiers for each data source. Fourth, a final list compiling all the

information (Hosseinpour *et al.*, 2018b). Once the mapping is completed the information obtained can be used to report gaps and define priority areas for action (World Health Organization, 2013c). Quality controls for this study were: selection of databases that followed a rigorous screening and triangulation of researchers in cases of uncertainty. Further detailed information can be found in the article 3.

4. Ethical considerations

A universal aim of the research done in social sciences should be to improve public health and health care equity, and more specifically to empower people, from global to local policy levels, with knowledge and evidence useful to make positive public health changes and policy choices. An ethical behaviour is an imperative of any human interaction but, the need for it increases when a research relationship occurs across cultures, especially in the case of low income countries. All the empirical work of this thesis has the approval of the Ethical Committee of the Ministry of Health of Mozambique “Comité Institucional de Bioética do Instituto Nacional de Saúde (CIBS-INS)” reference 046/CIBS-INS/2015. The quantitative work is based on an analysis of existing data sets on national surveys with all identifier information removed. Additionally, active members of the research project were researchers from the Ministry of Health of Mozambique, the Medical School of the University Eduardo Mondlane and the National Institute of Statistics of Mozambique.

V. RESULTS

Four scientific articles constitute the results of the present thesis:

Article 1: Beyond access to basic services: perspectives on social health determinants of Mozambique

Article 2: Equity in the access and quality of primary health care in Sub-Saharan Africa: a systematic review

Article 3: Inequalities in the access to and quality of health care in Mozambique: evidence from the household budget survey

Article 4: Strengthening health equity monitoring is an essential public health need: Lessons from Mozambique

Article 1

Llop-Girones A, Jones S. [Beyond access to basic services: perspectives on social health determinants of Mozambique.](#) Crit Public Health. 2020 May 25;1–15. DOI: 10.1080/09581596.2020.1769838

Article 2

Llop-Gironés A., Cash-Gibson, L., Odallah, A., Dula, J., Chicumbe, S., Zahinos, I., Alvarez, F., Mazive, E. & Benach, J. (2018) *Equity in the access and quality of primary health care in Sub-Saharan Africa: a systematic review* (under preparation)

Equity in the access and quality of primary health care in Sub-Saharan Africa: a systematic review

Llop-Gironés A., Cash-Gibson, L., Odallah, A., Dula, J., Chicumbe, S., Zahinos, I., Alvarez, F., Mazive, E. & Benach, J. (2018) (under preparation)

Abstract

The health policies, financing and development actions in the last five decades has been directed to increase the access to health care in Sub-Saharan Africa (SSA) region. The present systematic review sought to identify the scientific literature on equity in the access to and quality of primary health care (PHC) in the region. This information can be used to potentially inform decision making around new or improved interventions designed to improve access to and quality of PHC in each of the 49 countries in the region. Empirical studies on access to and quality of primary healthcare in the region, published in PubMed, Web of Science, SCOPUS and African Index Medicus were reviewed. Of the 64 articles finally included, 57 articles analysed the access to PHC and 7 studies analysed the quality of PHC in 16 of the 49 SSA countries. The main finding is that access and quality of PHC in the SSA region is mainly determined by the social position, rather than by the need. The health care inequalities have persisted along the time, and between and within countries. Research should focus on monitoring the progress of equity over time and evaluating the effects of different interventions on equity between and within countries.

Keywords: Health Care Quality, Access, and Evaluation; Delivery of Health Care; Healthcare Disparities; Sub-Saharan Africa; systematic review

1. Introduction

Equitable access to quality healthcare is essential for reducing preventable deaths, most of them among women in Sub-Saharan Africa (SSA) (Chinkhumba *et al.*, 2014). This was already acknowledged 40 years ago in the Alma-Ata declaration. The concept of Primary Health Care (PHC) envisioned explicitly incorporated actions for addressing the underlying social, economic and political causes of poor health and it had a health service focus to respond more equitably, appropriately and effectively to basic health care needs (WHO and UNICEF, 1978). Substantial evidence shows that a well-functioning health system based in PHC is most critical for the health and well-being of populations (Starfield *et al.*, 2005). Nowadays, the widening health inequalities in SSA make PHC timely and relevant (Zere and McIntyre, 2003a; Herrin *et al.*, 2013; Ataguba *et al.*, 2015; Dos Santos *et al.*, 2015; Adewuyi *et al.*, 2017).

Over the last decades, countries in Sub-Saharan Africa have made tangible progress towards expanding the network of health care facilities. This expansion aimed at addressing high rates of child and maternal mortality, as well as the prevalence of specific communicable diseases such as HIV/AIDs, tuberculosis and malaria with a preference for high impact technical health interventions (Cueto, 2004; Irwin and Scali, 2007). Little attention has been paid however to whether the people in SSA countries who have the same health needs receive equal access to quality care. Furthermore, SSA health systems are pluralistic systems, where traditional medicine is considered to be part of the health care choices, yet this is often neglected (Tsey, 1997; Campbell-Hall *et al.*, 2010; Sarmiento *et al.*, 2016).

Only a handful of previous reviews have analysed access to and quality of care in SSA. Musheke *et al.* (2013) have reviewed the uptake of HIV testing in SSA, Kiwanuka *et al.* (2008) analysed the utilisation of health services for the poor in Uganda and Çalışkan *et al.* (2015) reviewed the maternal health services in

developing countries. These reviews presented a number of limitations in terms of either the population assessed (Musheke *et al.*, 2013) or they lacked the focus on equity (Kiwanuka *et al.*, 2008; Musheke *et al.*, 2013). Only, one study had a focus on healthcare equity, however, only maternal healthcare services were analysed (Çalışkan *et al.*, 2015).

Our systematic review aims to assess the available empirical literature on equity in the access to and quality of PHC in each of the 49 countries in the SSA region, and aims to address two crucial questions: 1) “Do people in SSA countries who have the same health needs, receive equal access to PHC, regardless of their social group (e.g. income, education, gender, age, ethnicity/race or place of residence)?”; and 2) “Do people in SSA who access PHC, received equal quality of care, regardless of their social group?”.

2. Methodology

2.1. Identification of studies

A systematic search of the literature was conducted in four electronic databases: PubMed, Web of Science (WOS), SCOPUS and African Index Medicus, to identify empirical peer-reviewed studies published in English, French, Spanish or Portuguese for one of the 49 countries in the SSA region. No time restricts were applied. The search terms related to “access”, “quality”, “equity”, “healthcare disparities” and “Sub-Saharan Africa” were used. In the case of Pubmed the detailed search strategy is shown in table 1, it was adapted to each of the databases accordingly.

2.2. Study selection

Following the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), after the electronic search in the databases, the authors screened titles and abstracts for relevance. After excluding the articles that did not

meet the inclusion criteria, the full-text were downloaded for further assessment and inclusion. Results were compared by two authors, and any disagreements a third author made the final decision. The articles were read thoroughly and, commented by the research team. The data extraction process is shown in Figure 1.

2.3. Data extraction process

Data from the included articles were charted by two authors in an excel document and divided into eight columns: citation, location, population, study design and source of information; equity stratifier, PHC dimension, relevant findings and quality assessment. Table 2 includes a description of the criteria used for data extraction.

This study by including the equity stratifier, distinguished between the overall distribution of healthcare (as total inequality) and the inequalities between social groups (social inequality). To measure the social inequality the equity stratifiers are needed as a way of showing differences in healthcare between social groups described by income – wealth, expenditure or assets, education, gender, age, ethnicity/race and place of residence (World Health Organization, 2013).

The following criteria was used to assess the relevance in the screening and elimination process: studies of a SSA country that formulated a research question regarding healthcare equity or a question with healthcare equity implications; conducted an empirical analysis; clearly stated the outcome variable (the main dimensions relevant for the search were: PHC as first point of care, traditional medicine, basic emergency obstetric care, preventive or promotion activities, activities within the community); described the data collection; focused on utilization (as access proxy) or quality of PHC. Since the focus of this systematic review is the care received by the population in PHC, accessibility to health facility and financial coverage were not considered of the scope of this review.

In addition, although simple bivariate analysis between population groups could give a general perspective of the differences, the study only took into account those studies that used more refined measures of health care inequality, such as the regression-based, concentration index or population attributable risk (Mackenbach and Kunst, 1997; Wagstaff and van Doorslaer, 2000). Furthermore, the study extracted information on the authorship of the articles included in the study: sex and affiliation of first author, as well as the funding source of the study.

2.4. *Quality assessment*

The quality of the studies was assessed by scoring the articles as excellent, good and fair following the criteria of the study of Çalışkan *et al.* (2015) with the corresponding adaptation for the present study: 1) Clear research question (higher score if it is regarding healthcare equity); 2) Clear explanation of data and the data collection process; 3) Clear definition of the outcome variable; 4) Data collection tools (higher score if the study analyse a nationally representative survey); 5) Clear definition of the methodology; 6) Empirical analysis (complex analysis higher score); 7) Clear disclosure of the study's limitations. The heterogeneity in the included studies made a further meta-analysis inappropriate and insignificant, hence, a narrative systematic review is carried out.

3. Results

The literature search yielded 2,998 records from which 67 were duplicates and 2,840 were considered non-relevant for the purposes of this study after title and abstract screening. The full-text articles of the remaining 91 records were assessed for eligibility and 27 were excluded at this stage because of one of the following reasons: not retrieved, not considered the need for care, not within the scope of the study, only descriptive results, or quality issues. 64

articles met the inclusion criteria and were included in the study (Figure 1). Of the 64 studies included, 13 were qualified of excellent quality, 42 were of good quality and 9 were fair. The quality of all included articles is summarized in Table 3 and 4.

3.1. Distribution of scientific production

Figure 2 show the details of the authorship and funding of the studies included. 21 studies had female first authors, of these, 11% were affiliated to SSA institutions and 22% were affiliated to non-SSA institutions. 43 studies had male first authors. 36% of these were affiliated to SSA institutions and 31% were affiliated to non-SSA institutions. With regard to the funding of the studies, only 5% of the studies of women are funded by SSA sources, 20% are non-SSA sources and in 8% cases it is not reported. For men, 8% are funded by SSA sources, 22% by non-SSA funds and 38% cases it was not reported.

3.2. Access to primary health care

Figure 3 summarises the distribution by country of the 57 articles that analysed the utilization of PHC or one or more services of this level of care. Only 16 countries have studies analysing the equity in the access to PHC, of these Ethiopia (n=12), Nigeria (n=10) and Tanzania (n=6) are the countries that have more articles on this topic, followed by Ghana (n=5) and Kenya (n=4). Malawi, Namibia and South Africa have three studies in each country. Burkina Faso, DR Congo, Mozambique have two studies in each country and countries with one study are Angola, Sudan, Togo, Uganda and Zambia.

A summary of the studies reviewed is provided in table 3. Seventeen of these studies used a national data tool, 28 used an external data tool, and 12 studies do not clarify the origin of the data tool. Thirty studies used nationally representative surveys and researches used their own collected data in 27 studies. Of the 57

articles that analyse inequalities in the access to care, 13 articles used wealth as equity stratifier (Zere and McIntyre, 2003a; Noor *et al.*, 2007; Zere *et al.*, 2007, 2010; Ye *et al.*, 2012; Phiri and Ataguba, 2014; Egondi *et al.*, 2015; Ataguba *et al.*, 2016; Hailu *et al.*, 2016; Johnson *et al.*, 2016; Memirie *et al.*, 2016; Wabiri *et al.*, 2016; Mezmur *et al.*, 2017), three used place of residence (Mekonnen and Mekonnen, 2003; Fekadu and Regassa, 2014; Begashaw *et al.*, 2016) and two gender (Buor, 2004; Saeed *et al.*, 2016).

A limited sample of six articles in SSA analysed the utilization of PHC in general. The two studies that did a disaggregated analysis for PHC and used a national representative survey, found pro-poor utilization in Zambia (Phiri and Ataguba, 2014) and South Africa (Zere and McIntyre, 2003b). Other studies that analysed PHC together with other levels of care, found no significant differences by wealth, educational attainment for people with same health need living in urban area in Esera district in Ethiopia (Begashaw *et al.*, 2016), Lubumbashi in DRC (Chenge *et al.*, 2014) and Nairobi in Kenya (Taffa *et al.*, 2005). And, only a study in Ashanti region of Ghana found a higher utilization for those with more wealth and higher educational attainment when analysing PHC together with other levels of care and disaggregated by sex (Buor, 2004).

3.2.1. Studies on the access to prevention and promotion activities

Some studies focused in specific prevention and promotion activities as: routine child immunization services, malaria prevention (long-lasting insecticidal nets, indoor residual spraying, insecticide treated nets), HIV testing, family planning and cancer screening (table 3).

Routine child immunization services are studied in 14 articles. Nine articles found a higher utilization by population with more wealth. They were in Hoima district in Uganda (Oryema *et al.*, 2017), Kozah district in Togo (McCarthy *et al.*, 2017), Nigeria

(Antai, 2009; Ataguba *et al.*, 2016; Sibeudu *et al.*, 2017), Ethiopia (Memirie *et al.*, 2016; Mezmur *et al.*, 2017), an informal settlement of Nairobi in Kenya (Egondi *et al.*, 2015) and Malawi (Zere *et al.*, 2007). Two other studies with nationally representative data in Namibia (Antai, 2012) and Tanzania (Semali, 2010) found less use of the services when the mother of the children had a lower educational attainment. Semali (2010) in Tanzania also found higher utilization in urban area. Conversely, other two studies using a national representative survey did not find differences by both wealth and educational attainment in Malawi (Abebe *et al.*, 2012) and Kenya (Van Malderen *et al.*, 2013). The study in Kenya did not find also differences by gender and place of residence (Van Malderen *et al.*, 2013). Also a study in Bom Jesus in Angola did not find differences by educational attainment and place of residence (Oliveira *et al.*, 2014) (table 3).

Five articles analysed the prevention activities for malaria. Two studies found higher use of long-lasting insecticidal nets and space spraying for the population with more wealth in different regions in Ethiopia (Hailu *et al.*, 2016) and Sudan (Onwujekwe *et al.*, 2006). Also, Onwujekwe *et al.* (2006) in Sudan found higher use by population with higher educational attainment. Conversely, other three studies that analysed the utilization of long-lasting insecticidal nets did not find differences by wealth in Nouna district in Burkina Faso (Zollner *et al.*, 2015), Kano state in Nigeria (Ye *et al.*, 2012) and Kenya (Noor *et al.*, 2007) (table 3).

Three studies analysed the utilization of HIV testing, and found higher use for wealthier population and with higher educational attainment in Gaza province in Mozambique (Yao *et al.*, 2014), South Africa (Wabiri *et al.*, 2016) and Tanzanian Kilombero district (Mtowa *et al.*, 2017). But, Mtowa *et al.* (2017) in the Tanzanian district did not find differences by gender, ethnicity and occupation.

Another two studies in Ethiopia analysed the utilization of family planning services using national representative data (Onarheim *et al.*, 2015; Memirie *et al.*, 2016), they found a higher

use by the population with more wealth and Onarheim *et al.* (2015) also found higher use by population with higher educational attainment.

Finally, one study analysed the cervical cancer screening in Namibia using nationally representative data and found higher utilization by women with more wealth and higher educational attainment and no differences by place of residence (Kangmennaang *et al.*, 2015) (Table 3).

3.2.2. Studies on the access to curative care

Regarding curative care, Table 3 also show that the majority of the studies are focused in the continuum of maternal care (prenatal, facility delivery and postnatal care), also some other studies focused on the utilization of healthcare for common illness in children and a single study focused on general population illness.

One or more services of the maternal health continuum were analysed in half of the studies analysing the equity in the access to care (n=28). Regarding antenatal care, 15 studies found a higher use by women with more wealth using nationally representative data from Ethiopia (Yesuf and Calderon-Margalit, 2013; Tarekegn *et al.*, 2014; Onarheim *et al.*, 2015; Mezmur *et al.*, 2017); Ghana (Asamoah and Agardh, 2014; Asamoah *et al.*, 2014b); Nigeria (Babalola and Fatusi, 2009; Fawole and Adeoye, 2015; Fagbamigbe and Idemudia, 2016); Namibia (Zere *et al.*, 2010); Malawi (Zere *et al.*, 2007); and South Africa (Wabiri *et al.*, 2016). These results are also consistent for different regions of Tanzania (Larsen *et al.*, 2016) and Ethiopia (Birmeta *et al.*, 2013; Wilunda *et al.*, 2015). Similar results were obtained for educational attainment, women with higher education used more the service in Nigeria (Fagbamigbe and Idemudia, 2016), Ghana (Asamoah and Agardh, 2014; Asamoah *et al.*, 2014b) and in Ethiopia (Mekonnen and Mekonnen, 2003; Tarekegn *et al.*, 2014; Onarheim *et al.*, 2015), also in a region of Ethiopia (Birmeta *et al.*, 2013). Another study found higher utilization by women with access to assets in Kinshasa

in DRC (Feinstein *et al.*, 2013). Only one study in Nouna district in Burkina Faso found a lower use for women with more wealth and no differences by educational attainment (De Allegri *et al.*, 2011). Additionally, De Allegri *et al.* (2011) found lower use of antenatal care by Samo and Marka women. Also, the study of Tarekegn *et al.* (2014) in Ethiopia found lower use of Sidama and Wolaita. Conversely, the study of Feinstein *et al.* (2013) in Kinshasa in DRC and another study in Nigeria (Babalola and Fatusi, 2009) found no differences by ethnic group, however, the more recent study of Fagbamigbe and Idemudia (2016) in Nigeria found higher use by Igbo. Some studies in Nigeria also presented inconsistent results regarding place of residence, Fagbamigbe and Idemudia (2016) did not find differences but Fawole and Adeoye (2015) found higher use in urban areas. The inconsistencies by place of residence were similar to the case of Ghana where Asamoah *et al.* in two studies in 2014 found in one no differences by place of residence (Asamoah and Agardh, 2014) and the other found higher use in urban areas (Asamoah *et al.*, 2014b). Another study also found higher use in urban areas in Ethiopia (Tarekegn *et al.*, 2014) (table 3).

With regard to facility delivery, 17 studies found a higher use by population with more wealth using nationally representative data from Ethiopia (Mezmur *et al.*, 2017; Memirie *et al.*, 2016; Tarekegn *et al.*, 2014; Yesuf and Calderon-Margalit, 2013); Ghana (Asamoah and Agardh, 2014; Asamoah *et al.*, 2014b; Johnson *et al.*, 2016); Namibia (Zere *et al.*, 2010, 2011); Nigeria (Babalola and Fatusi, 2009); Malawi (Zere *et al.*, 2007); South Africa (Wabiri *et al.*, 2016) and Kenya (Van Malderen *et al.*, 2013). Also, higher use by population with more wealth was found in different regions of Tanzania (Exavery *et al.*, 2014) and Ethiopia (Birmeta *et al.*, 2013; Wilunda *et al.*, 2015). Consistently, the studies found similar results for women with higher educational attainment, the results using nationally representative data show they used facility delivery more in Ethiopia (Tarekegn *et al.*, 2014; Fekadu and Regassa, 2014; Mekonnen and Mekonnen, 2003); Ghana (Asamoah and Agardh, 2014; Asamoah *et al.*, 2014b); Namibia (Zere *et al.*, 2011); Nigeria

(Fawole and Adeoye, 2015) and Kenya (Van Malderen *et al.*, 2013). Also, in different regions of Tanzania (Exavery *et al.*, 2014) and Ethiopia (Birmeta *et al.*, 2013; Wilunda *et al.*, 2015). Also, Spangler and Bloom (2010) found higher use of women with iron roof and radio in Kilombero and Ulanga district in Tanzania. As previously stated for prenatal care, De Allegri *et al.* (2011) also did not find any difference by wealth or educational attainment in Nouna district in Burkina Faso. Additionally, some of the previous studies also found differences by ethnic group, some found lower use as in different districts of Tanzania for Sukuma women (Exavery *et al.*, 2014), in Ethiopia for Sidama, Tigrie and Wolaita women (Tarekegn *et al.*, 2014) and in Kenya for Kamba, Luhya, Luo and Mijikenda women (Van Malderen *et al.*, 2013). The results for Nigeria are inconsistent, the study of Fawole and Adeoye (2015) found lower use of facility delivery for Igbo and Yoruba women but Babalola and Fatusi (2009) found higher use of Yoruba women. Also, in Nouna district in Burkina Faso De Allegri *et al.* (2011) found higher use of Mossi, Peuhl and Marka women. Regarding place of residence, only two studies did not find differences, Exavery *et al.* (2014) in different districts in Tanzania and Van Malderen *et al.* (2013) in Kenya. Other three studies found higher use in urban areas of Ethiopia (Onarheim *et al.*, 2015), Ghana (Asamoah and Agardh, 2014; Asamoah *et al.*, 2014b), Ethiopia (Tarekegn *et al.*, 2014) and Namibia (Zere *et al.*, 2011) (table 3).

Some studies also analysed the use of postnatal care. Most of the studies found higher use of women with more wealth when using nationally representative data, in Ethiopia (Tarekegn *et al.*, 2014), Nigeria (Babalola and Fatusi, 2009; Ononokpono *et al.*, 2014) and Namibia (Zere *et al.*, 2010), also in Kozah district in Togo (McCarthy *et al.*, 2017). Additionally, Tarekegn *et al.* (2014) in Ethiopia and Ononokpono *et al.* (2014) in Nigeria found higher use of women with higher educational attainment. In the case of Nigeria, two studies found similar results regarding a higher use of Igbo (Babalola and Fatusi, 2009), Yoruba, Hausa, Fulani, Kanuri

women (Ononokpono *et al.*, 2014). Tarekegn *et al.* (2014) in Ethiopia also found a higher use in urban areas (table 3).

Six studies analysed the utilization of PHC for children illnesses and all found differences by wealth, educational attainment or both. A higher use for children in families with more wealth was reported in Kozah district in Togo (McCarthy *et al.*, 2017), Ethiopia (Memirie *et al.*, 2016) and Malawi (Zere *et al.*, 2007; Ustrup *et al.*, 2014). Also, higher use by children in families with higher educational attainment was found in Zambezia province in Mozambique (Bayham *et al.*, 2017) and Kilombero, Ulanga and Rufiji district in Tanzania (Kante *et al.*, 2015). Additionally, the study of Kante *et al.* (2015) in different districts of Tanzania found a higher use in urban areas. Conversely, in Malawi, Ustrup *et al.* (2014) found no differences by place of residence. The study that analysed general population illness and utilization of PHC found higher use of population with higher wealth, the study settings was Ambara and Enugu states in Nigeria (Onwujekwe, 2005) (table 3).

3.2.3. Studies on the access to traditional medicine

Two studies assessed the utilization of traditional medicine. In Ghana, Saeed *et al.* (2016) found a lower use of population with more wealth and higher use of women with higher educational attainment. In KwaZulu-Natal province in South Africa, Nlooto and Naidoo (2016) found higher use of population with more wealth and black people, and lower use of population with higher educational attainment (table 3).

3.3. Quality of primary health care

In total, seven studies analysed the quality of PHC. Figure 3 shows the distribution by country of the studies, a limited sample of four countries analysed the quality of PHC. The studies were one in Tanzania (Larson *et al.*, 2017); two in Ghana (Ayanore *et al.*, 2016; Mezmur *et al.*, 2017); two in Kenya (Nguihu *et al.*, 2017; Sharma *et*

al., 2017) and two in South Africa (Myburgh *et al.*, 2005; Hasumi and Jacobsen, 2014).

A summary of the studies included is shown in table 4. Of the seven studies, six used an external data tool and one a national data tool. Also, six studies used nationally representative surveys and one reported results for a region. Of these articles, three used wealth or a multidimensional poverty index (Larson *et al.*, 2017; Nguhiu *et al.*, 2017; Sharma *et al.*, 2017) as equity stratifier and one race/ethnicity (Hasumi and Jacobsen, 2014).

Only two studies in South Africa analysed the quality of care in general, but from different approaches, Hasumi and Jacobsen (2014) stratified by race/ethnic group and found that for higher quality problems for Black Africans that are adults older than 60 years, from urban areas and higher income. For White population, higher quality problems for adults older than 60 years and no differences by place of residence or income. Coloured and Indian/Asian population did not find differences in the quality of care (Hasumi and Jacobsen, 2014). Additionally, Myburgh *et al.* (2005) found better quality for white population and those in the wealthiest position (table 4).

3.3.1. Studies on the quality of prevention and promotion activities

The study of Nguhiu *et al.* (2017) in Kenya found pro-poor inequalities in the quality of the care received for breastfeeding and use of insecticide-treated nets (table 4).

3.3.2. Studies on the quality of curative care

Regarding the continuum of maternal care, better quality of antenatal care for women with more wealth was reported in Kenya (Nguhiu *et al.*, 2017; Sharma *et al.*, 2017) and Ghana (Ayanore *et al.*, 2016). Also, better quality of facility skilled delivery for women with more wealth was reported by a study in the Pwani region in Tanzania (Larson *et al.*, 2017), in Kenya (Nguhiu *et al.*, 2017;

Sharma *et al.*, 2017) and Ghana (Asamoah *et al.*, 2014a; Ayanore *et al.*, 2016). Furthermore, studies in Kenya (Nguhiu *et al.*, 2017) and Ghana (Ayanore *et al.*, 2016) also reported better quality of postnatal care for women with more wealth.

4. Discussion

This review is especially timely given the increased global concern to reduce health inequalities (Cash-Gibson *et al.*, 2018), and to increase equitable access specially to acceptable PHC within each country (United Nations, 2015). Despite the large volume of empirical literature found in this systematic review, equitable access to quality PHC is only analysed in 16 out of 49 SSA countries and a considerable number of articles mainly focused on specific health interventions, consistently with the selective emphasis on access to basic services of the last decade (Cueto, 2004). Overall what is found from the findings of this review is that access and quality of PHC in the SSA region are mainly determined by the social position, rather than by the need. Health care inequalities have persisted along the time, and between and within countries, which indicates that more attention should be paid to how gains in the access and quality of care are equitably distributed across population sub-groups.

The organization, staff, and costs put PHC in a position to be able to provide comprehensive, integrated care to the population and it should be able to deal, at least theoretically, with 90 percent of health care demands (The World Bank, 1994). However, only two studies have evaluated the access to PHC disaggregated from other levels of care (Zere and McIntyre, 2003a; Phiri and Ataguba, 2014). They found pro-poor inequalities for public primary health facilities, this distribution, rather than describing a situation of equitable care, may reflect the fact that the poor are more likely to use PHC, as PHC tends to be closer to the community, meanwhile wealthier population are more likely to use more specialist care, as hospitals which are normally placed in urban settings (Phiri and

Ataguba, 2014). It also has further implications, it may indicate that the quantity of healthcare (e.g., diagnostic tests, treatments or follow-up visits) and quality of care received by the poorest cannot be clearly ascertained. The two studies that analysed quality of PHC (Myburgh *et al.*, 2005; Hasumi and Jacobsen, 2014) pointed to inequalities in the quality of care received. Greater attention to the equity in the provision of quality care is needed since there is evidence that poor quality has impact in health outcomes (Kruk *et al.*, 2018). Moreover, traditional healers are considered to be the most important link between the rural communities and health care delivery (Nelms and Gorski, 2006) however, only two studies analysed the access to traditional medicine, and despite being based in different countries, they found different results (Nlooto and Naidoo, 2016; Saeed *et al.*, 2016). Also, a lack of studies regarding community involvement is of concern. More research is needed in order to cover this research gap and understand the continuum from traditional medicine, community involvement and PHC.

A number of previous scientific articles have discussed about the persistent inequitable dynamics within the production and evaluation of (public health) research, as well as in the authorship between Western countries and the Global South (Dahdouh-Guebas *et al.*, 2003; Pellegrini Filho, 2011; Cash-Gibson *et al.*, 2018). As such, to provide a better understanding of the global dynamics within this research field based in SSA, we also examined the first author country of institutional affiliation of the included studies. This type of information provides insights on the national and regional capacity to conduct research to evaluate equitable access to quality PHC by different social groups. We found that approximately half of the research found was produced by a first author affiliated to an institution of SSA. It is also relevant to highlight the scarce number of SSA female first authors within these studies. In addition, regarding the funding sources of the studies, only 13% of the funds came from SSA sources. Similarly, other articles in Guinea-Bissau, Gambia or Mali assessing the national health research capacity have shown that research in SSA

depends to a greater extent to external donor funding and has limited governmental support (Albert *et al.*, 2007; Palmer *et al.*, 2009; Kok *et al.*, 2012).

The quality of the majority of the articles included in this systematic review was not strong enough according to our classification. Although this depends on multiple factors related to national health research capacity; one of them is the availability of comprehensive health and socio-demographic data sources in each country. A substantial number of articles used external data sources and they are based in the same type of household surveys. Household surveys usually have some of the required information to monitor health care inequalities, yet these surveys are intermittent, limited in power for district-level estimates (World Health Organization, 2013; Wagenaar *et al.*, 2016), and lack relevant population information for comprehensive equity-oriented decision-making (e.g. information on disadvantaged and marginalised population). Also, the studies are heterogeneous in the outcome variables chosen, however it has not affected the main result of the review, since evidence from most studies find health care inequalities irrespective of the outcome variable.

This review acknowledges a number of study limitations. Firstly, the search strategy used for the identification of studies might lead to exclusion of some relevant studies, although the searches performed have been extensive and we believe that we have sufficiently covered the aim. Secondly, the search included international peer reviewed literature with empirical results indexed in PubMed, Web of Science, SCOPUS and African Index Medicus which might reduce the scope of the review. Nonetheless, it is in line with the aim of the study that was to evaluate the empirical literature on equity in the access to and quality of PHC in SSA countries. Thirdly, with regards to authorship, we only looked at first authorship' and did not examine the corresponding authorship, which may provide more information about the 'senior research leadership'.

In conclusion, this systematic review presents the available empirical evidence on equitable access to and quality of PHC in each of the 49 Sub-Saharan Africa countries. Despite the substantial number of articles found, only a scarce number of countries assessed the entire PHC services available; the articles tended to focus on specific services or health interventions. Despite the challenge to draw general conclusions, what could be observed is that the access and quality of PHC is mainly determined by social position, instead of by need. The findings of the present review can potentially be used to inform the future decisions regarding new or improved interventions for increasing equitable access to quality PHC in each of the 49 countries in the region. Additionally, the review provides information regarding what services have and have not been evaluated in each country, therefore highlighting new areas of research for the region. Further research should investigate the factors contributing to health care inequity, monitor the progress of equity over time, and evaluate the effects of different interventions on equity between and within countries.

6. References

- Abebe DS, Nielsen VO, Finnvold JE. 2012. Regional inequality and vaccine uptake: a multilevel analysis of the 2007 Welfare Monitoring Survey in Malawi. *BMC public health* 12: 1075.
- Adewuyi EO, Zhao Y, Lamichhane R. 2017. Risk factors for infant mortality in rural and urban Nigeria: evidence from the national household survey. *Scandinavian Journal of Public Health* 45: 543–54.
- Albert MA, Fretheim A, Maïga D. 2007. Factors influencing the utilization of research findings by health policy-makers in a developing country: the selection of Mali's essential medicines. *Health Research Policy and Systems* 5: 2.
- Antai D. 2009. Inequitable childhood immunization uptake in Nigeria: a multilevel analysis of individual and contextual determinants. *BMC infectious diseases* 9: 181.

- Antai D. 2012. Gender inequities, relationship power, and childhood immunization uptake in Nigeria: a population-based cross-sectional study. *International journal of infectious diseases : IJID : official publication of the International Society for Infectious Diseases* 16: e136-145.
- Asamoah B, Agardh A. 2014. Inequality trends in maternal health services for young Ghanaian women with childbirth history between 2003 and 2014. *BMJ open* 7: e011663.
- Asamoah B, Agardh A, Cromley EK. 2014a. Spatial analysis of skilled birth attendant utilization in Ghana. *Global journal of health science* 6: 117–27.
- Asamoah B, Agardh A, Pettersson KO, Ostergren P-O. 2014b. Magnitude and trends of inequalities in antenatal care and delivery under skilled care among different socio-demographic groups in Ghana from 1988 - 2008. *BMC pregnancy and childbirth* 14: 295.
- Ataguba JE, Ojo KO, Ichoku HE. 2016. Explaining socio-economic inequalities in immunization coverage in Nigeria. *Health policy and planning* 31: 1212–24.
- Ataguba JE-O, Day C, McIntyre D. 2015. Explaining the role of the social determinants of health on health inequality in South Africa. *Global Health Action* 8.
- Ayanore MA, Pavlova M, Groot W. 2016. Focused maternity care in Ghana: results of a cluster analysis. *BMC health services research* 16: 395.
- Babalola S, Fatusi A. 2009. Determinants of use of maternal health services in Nigeria--looking beyond individual and household factors. *BMC pregnancy and childbirth* 9: 43.
- Bayham M, Blevins M, Lopez M, *et al.* 2017. Predictors of Health-Care Utilization Among Children 6-59 Months of Age in Zambezia Province, Mozambique. *The American journal of tropical medicine and hygiene* 96: 493–500.
- Begashaw B, Tessema F, Gesesew HA. 2016. Health Care Seeking Behavior in Southwest Ethiopia. *PloS one* 11: e0161014.

- Birmeta K, Dibaba Y, Woldeyohannes D. 2013. Determinants of maternal health care utilization in Holeta town, central Ethiopia. *BMC health services research* 13: 256.
- Buor D. 2004. Gender and the utilisation of health services in the Ashanti Region, Ghana. *Health policy (Amsterdam, Netherlands)* 69: 375–88.
- Çalışkan Z, Kılıç D, Öztürk S, Atılğan E. 2015. Equity in maternal health care service utilization: a systematic review for developing countries. *International Journal of Public Health* 60: 815–25.
- Campbell-Hall V, Petersen I, Bhana A, *et al.* 2010. Collaboration between traditional practitioners and primary health care staff in South Africa: developing a workable partnership for community mental health services. *Transcultural Psychiatry* 47: 610–28.
- Cash-Gibson L, Rojas-Gualdrón DF, Pericàs JM, Benach J. 2018. Inequalities in global health inequalities research: A 50-year bibliometric analysis (1966-2015). *Plos One* 13: e0191901.
- Chenge MF, Van der Venet J, Luboya NO, Vanlerberghe V, Mapatano MA, Criel B. 2014. Health-seeking behaviour in the city of Lubumbashi, Democratic Republic of the Congo: results from a cross-sectional household survey. *BMC health services research* 14: 173.
- Chinkhumba J, De Allegri M, Muula AS, Robberstad B. 2014. Maternal and perinatal mortality by place of delivery in sub-Saharan Africa: a meta-analysis of population-based cohort studies. *BMC Public Health* 14: 1014.
- Cueto M. 2004. The origins of primary health care and selective primary health care. *American Journal of Public Health* 94: 1864–74.
- Dahdouh-Guebas F, Ahimbisibwe J, Moll RV, Koedam N. 2003. Neo-colonial science by the most industrialised upon the least developed countries in peer-reviewed publishing. *Scientometrics* 56: 329–43.

- De Allegri M, Ridde V, Louis VR, *et al.* 2011. Determinants of utilisation of maternal care services after the reduction of user fees: a case study from rural Burkina Faso. *Health policy (Amsterdam, Netherlands)* 99: 210–8.
- Dos Santos S, Ouédraogo F de C, Soura AB. 2015. Water-related factors and childhood diarrhoea in African informal settlements. A cross-sectional study in Ouagadougou (Burkina Faso). *Journal of Water and Health* 13: 562–74.
- Egondi T, Oyolola M, Mutua MK, Elung'ata P. 2015. Determinants of immunization inequality among urban poor children: evidence from Nairobi's informal settlements. *International journal for equity in health* 14: 24.
- Exavery A, Kanté AM, Njozi M, *et al.* 2014. Access to institutional delivery care and reasons for home delivery in three districts of Tanzania. *International Journal for Equity in Health* 13: 48.
- Fagbamigbe AF, Idemudia ES. 2016. Wealth and antenatal care utilization in Nigeria: Policy implications. *Health care for women international* 38: 17–37.
- Fawole OI, Adeoye IA. 2015. Women's status within the household as a determinant of maternal health care use in Nigeria. *African health sciences* 15: 217–25.
- Feinstein L, Dimomfu BL, Mupenda B, *et al.* 2013. Antenatal and delivery services in Kinshasa, Democratic Republic of Congo: care-seeking and experiences reported by women in a household-based survey. *Tropical medicine & international health : TM & IH* 18: 1211–21.
- Fekadu M, Regassa N. 2014. Skilled delivery care service utilization in Ethiopia: analysis of rural-urban differentials based on national demographic and health survey (DHS) data. *African health sciences* 14: 974–84.
- Hailu A, Lindtjorn B, Deressa W, Gari T, Loha E, Robberstad B. 2016. Equity in long-lasting insecticidal nets and indoor residual spraying for malaria prevention in a rural South Central Ethiopia. *Malaria journal* 15: 366.

- Hasumi T, Jacobsen KH. 2014. Healthcare service problems reported in a national survey of South Africans. *International journal for quality in health care : journal of the International Society for Quality in Health Care* 26: 482–9.
- Herrin WE, Amaral MM, Balihuta AM. 2013. The relationships between housing quality and occupant health in Uganda. *Social Science & Medicine* 81: 115–22.
- Irwin A, Scali E. 2007. Action on the social determinants of health: a historical perspective. *Global Public Health* 2: 235–56.
- Johnson FA, Frempong-Ainguah F, Padmadas SS. 2016. Two decades of maternity care fee exemption policies in Ghana: have they benefited the poor? *Health policy and planning* 31: 46–55.
- Kangmennaang J, Thogarapalli N, Mkandawire P, Luginaah I. 2015. Investigating the disparities in cervical cancer screening among Namibian women. *Gynecologic oncology* 138: 411–6.
- Kante AM, Gutierrez HR, Larsen AM, *et al.* 2015. Childhood Illness Prevalence and Health Seeking Behavior Patterns in Rural Tanzania. *BMC public health* 15: 951.
- Kiwanuka SN, Ekirapa EK, Peterson S, *et al.* 2008. Access to and utilisation of health services for the poor in Uganda: a systematic review of available evidence. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 102: 1067–74.
- Kok MO, Rodrigues A, Silva AP, de Haan S. 2012. The emergence and current performance of a health research system: lessons from Guinea Bissau. *Health Research Policy and Systems* 10: 5.
- Kruk ME, Gage AD, Arsenault C, *et al.* 2018. High-quality health systems in the Sustainable Development Goals era: time for a revolution. *The Lancet Global Health* 0.
- Larsen A, Exavery A, Phillips JF, Tani K, Kante AM. 2016. Predictors of Health Care Seeking Behavior During

- Pregnancy, Delivery, and the Postnatal Period in Rural Tanzania. *Maternal and child health journal* 20: 1726–34.
- Larson E, Vail D, Mbaruku GM, Mbatia R, Kruk ME. 2017. Beyond utilization: measuring effective coverage of obstetric care along the quality cascade. *International Journal for Quality in Health Care* 29: 104–10.
- Mackenbach JP, Kunst AE. 1997. Measuring the magnitude of socio-economic inequalities in health: an overview of available measures illustrated with two examples from Europe. *Social Science & Medicine* 44: 757–71.
- McCarthy KJ, Braganza S, Fiori K, *et al.* 2017. Identifying inequities in maternal and child health through risk stratification to inform health systems strengthening in Northern Togo. *PloS one* 12: e0173445.
- Mekonnen Y, Mekonnen A. 2003. Factors Influencing the Use of Maternal Healthcare Services in Ethiopia. *Journal of Health, Population and Nutrition* 21: 374–82.
- Memirie ST, Verguet S, Norheim OF, Levin C, Johansson KA. 2016. Inequalities in utilization of maternal and child health services in Ethiopia: the role of primary health care. *BMC Health Services Research* 16: 51.
- Mezmur M, Navaneetham K, Letamo G, Bariagaber H. 2017. Socioeconomic inequalities in the uptake of maternal healthcare services in Ethiopia. *BMC health services research* 17: 367.
- Mtowa A, Gerritsen AAM, Mtenga S, Mwangome M, Geubbels E. 2017. Socio-demographic inequalities in HIV testing behaviour and HIV prevalence among older adults in rural Tanzania, 2013. *AIDS care* 29: 1162–8.
- Musheke M, Ntalasha H, Gari S, *et al.* 2013. A systematic review of qualitative findings on factors enabling and deterring uptake of HIV testing in Sub-Saharan Africa. *BMC public health* 13: 220.
- Myburgh NG, Solanki GC, Smith MJ, Lalloo R. 2005. Patient satisfaction with health care providers in South Africa: the

- influences of race and socioeconomic status. *International journal for quality in health care : journal of the International Society for Quality in Health Care* 17: 473–7.
- Nelms LW, Gorski J. 2006. The role of the African traditional healer in women's health. *Journal of Transcultural Nursing: Official Journal of the Transcultural Nursing Society / Transcultural Nursing Society* 17: 184–9.
- Nguhiu PK, Barasa EW, Chuma J. 2017. Determining the effective coverage of maternal and child health services in Kenya, using demographic and health survey data sets: tracking progress towards universal health coverage. *Tropical medicine & international health* 22: 442–53.
- Nlooto M, Naidoo P. 2016. Traditional, complementary and alternative medicine use by HIV patients a decade after public sector antiretroviral therapy roll out in South Africa: a cross sectional study. *BMC complementary and alternative medicine* 16: 128.
- Noor AM, Amin AA, Akhwale WS, Snow RW. 2007. Increasing coverage and decreasing inequity in insecticide-treated bed net use among rural Kenyan children. *PLoS medicine* 4: e255.
- Oliveira MFS de, Martinez EZ, Rocha JSY. 2014. Factors associated with vaccination coverage in children < 5 years in Angola. *Revista de saude publica* 48: 906–15.
- Onarheim KH, Tadesse M, Norheim OF, Abdullah M, Miljeteig I. 2015. Towards universal health coverage for reproductive health services in Ethiopia: two policy recommendations. *International journal for equity in health* 14: 86.
- Ononokpono DN, Odimegwu CO, Imasiku ENS, Adedini SA. 2014. Does it really matter where women live? A multilevel analysis of the determinants of postnatal care in Nigeria. *Maternal and child health journal* 18: 950–9.
- Onwujekwe O. 2005. Inequities in healthcare seeking in the treatment of communicable endemic diseases in Southeast Nigeria. *Social Science & Medicine* 61: 455–63.

- Onwujekwe O, Malik E-F, Mustafa SH, Mnzavaa A. 2006. Do malaria preventive interventions reach the poor? Socioeconomic inequities in expenditure on and use of mosquito control tools in Sudan. *Health policy and planning* 21: 10–6.
- Oryema P, Babirye JN, Baguma C, Wasswa P, Guwatudde D. 2017. Utilization of outreach immunization services among children in Hoima District, Uganda: a cluster survey. *BMC research notes* 10: 111.
- Palmer A, Anya SE, Bloch P. 2009. The political undertones of building national health research systems – reflections from The Gambia. *Health Research Policy and Systems* 7: 13.
- Pellegrini Filho A. 2011. Public policy and the social determinants of health: the challenge of the production and use of scientific evidence. *Cadernos de Saúde Pública* 27: s135–40.
- Phiri J, Ataguba JE. 2014. Inequalities in public health care delivery in Zambia. *International Journal for Equity in Health* 13: 24.
- Saeed BII, Yawson AE, Nguah S, Agyei-Baffour P, Emmanuel N, Ayesu E. 2016. Effect of socio-economic factors in utilization of different healthcare services among older adult men and women in Ghana. *BMC Health Services Research* 16.
- Sarmiento I, Zuluaga G, Andersson N. 2016. Traditional medicine used in childbirth and for childhood diarrhoea in Nigeria's Cross River State: interviews with traditional practitioners and a statewide cross-sectional study. *BMJ open* 6: e010417.
- Semali IA. 2010. Trends in immunization completion and disparities in the context of health reforms: the case study of Tanzania. *BMC health services research* 10: 299.
- Sharma J, Leslie HH, Kundu F, Kruk ME. 2017. Poor Quality for Poor Women? Inequities in the Quality of Antenatal and Delivery Care in Kenya. *Plos One* 12.

- Sibeudu FT, Uzochukwu BSC, Onwujekwe OE. 2017. Investigating socio-economic inequity in access to and expenditures on routine immunization services in Anambra state. *BMC research notes* 10: 78.
- Spangler SA, Bloom SS. 2010. Use of biomedical obstetric care in rural Tanzania: the role of social and material inequalities. *Social science & medicine* 71: 760–8.
- Starfield B, Shi L, Macinko J. 2005. Contribution of Primary Care to Health Systems and Health. *The Milbank Quarterly* 83: 457–502.
- Taffa N, Chepngeno G, Amuyunzu-Nyamongo M. 2005. Child morbidity and healthcare utilization in the slums of Nairobi, Kenya. *Journal of tropical pediatrics* 51: 279–84.
- Tarekegn SM, Lieberman LS, Giedraitis V. 2014. Determinants of maternal health service utilization in Ethiopia: analysis of the 2011 Ethiopian Demographic and Health Survey. *BMC pregnancy and childbirth* 14: 161.
- The World Bank. 1994. Better health in Africa : experience and lessons learned. No. 13488. The World Bank.
- Tsey K. 1997. Traditional medicine in contemporary Ghana: a public policy analysis. *Social Science & Medicine* 45: 1065–74.
- United Nations. 2015. Transforming our World: the 2030 Agenda for Sustainable Development
- Ustrup M, Ngwira B, Stockman LJ, *et al.* 2014. Potential barriers to healthcare in Malawi for under-five children with cough and fever: a national household survey. *Journal of health, population, and nutrition* 32: 68–78.
- Van Malderen C, Ogali I, Khasakhala A, *et al.* 2013. Decomposing Kenyan socio-economic inequalities in skilled birth attendance and measles immunization. *International journal for equity in health* 12: 3.
- Wabiri N, Chersich M, Shisana O, Blaauw D, Rees H, Dwane N. 2016. Growing inequities in maternal health in South Africa:

- a comparison of serial national household surveys. *BMC pregnancy and childbirth* 16: 256.
- Wagenaar BH, Sherr K, Fernandes Q, Wagenaar AC. 2016. Using routine health information systems for well-designed health evaluations in low- and middle-income countries. *Health Policy and Planning* 31: 129–35.
- Wagstaff A, van Doorslaer E. 2000. Chapter 34: Equity in health care finance and delivery. In: *Handbook of Health Economics*. Elsevier Science
- WHO and UNICEF. 1978. Declaration of Alma-Ata. WHO, Geneva.
- Wilunda C, Quaglio G, Putoto G, *et al.* 2015. Determinants of utilisation of antenatal care and skilled birth attendant at delivery in South West Shoa Zone, Ethiopia: a cross sectional study. *Reproductive health* 12: 74.
- World Health Organization. 2013. *Handbook on Health Inequality Monitoring with a special focus on low- and middle-income countries*. Geneva.
- Yao J, Agadjanian V, Murray AT. 2014. Spatial and social inequities in HIV testing utilization in the context of rapid scale-up of HIV/AIDS services in rural Mozambique. *Health & place* 28: 133–41.
- Ye Y, Patton E, Kilian A, Dovey S, Eckert E. 2012. Can universal insecticide-treated net campaigns achieve equity in coverage and use? the case of northern Nigeria. *Malaria journal* 11: 32.
- Yesuf EA, Calderon-Margalit R. 2013. Disparities in the use of antenatal care service in Ethiopia over a period of fifteen years. *BMC pregnancy and childbirth* 13: 131.
- Yesuf EA, Kerie MW, Calderon-Margalit R. 2014. Birth in a health facility--inequalities among the Ethiopian women: results from repeated national surveys. *PloS one* 9: e95439.
- Zere E, McIntyre D. 2003a. Inequities in under-five child malnutrition in South Africa. *International Journal for Equity in Health* 2: 7.

- Zere E, McIntyre D. 2003b. Equity in self-reported adult illness and use of health service in South Africa: inter-temporal comparison. *Journal of health, population, and nutrition* 21: 205–15.
- Zere E, Moeti M, Kirigia J, Mwase T, Kataika E. 2007. Equity in health and healthcare in Malawi: analysis of trends. *BMC public health* 7: 78.
- Zere E, Oluwole D, Kirigia JM, Mwikisa CN, Mbeeli T. 2011. Inequities in skilled attendance at birth in Namibia: a decomposition analysis. *BMC pregnancy and childbirth* 11: 34.
- Zere E, Tumusiime P, Walker O, Kirigia J, Mwikisa C, Mbeeli T. 2010. Inequities in utilization of maternal health interventions in Namibia: implications for progress towards MDG 5 targets. *International journal for equity in health* 9: 16.
- Zollner C, De Allegri M, Louis VR, *et al.* 2015. Insecticide-treated mosquito nets in rural Burkina Faso: assessment of coverage and equity in the wake of a universal distribution campaign. *Health policy and planning* 30: 171–80.

Tables and Figures

Table 1. Terms used in the systematic search to locate peer-reviewed studies in Pubmed

((Angola OR Benin OR Botswana OR "Burkina Faso" OR Burundi OR Cameroon OR "Cape Verde" OR "Central African Republic" OR Chad OR Comoros OR Congo OR "Côte d'Ivoire" OR Djibouti OR "Equatorial Guinea" OR Eritrea OR Ethiopia OR Gabon OR Gambia OR Ghana OR Guinea OR Kenya OR Lesotho OR Liberia OR Madagascar OR Malawi OR Mali OR Mauritania OR Mauritius OR Mozambique OR Namibia OR Niger OR Nigeria OR Rwanda OR "Sao Tome" OR Senegal OR Seychelles OR "Sierra Leone" OR Somalia OR "South Africa" OR Sudan OR Swaziland OR Tanzania OR Togo OR Uganda OR Zambia OR Zimbabwe) OR "Africa South of the Sahara"[Mesh]) AND ("Healthcare Disparities"[Mesh] OR inequal*[title/abstract] OR inequit*[title/abstract] OR equit*[title/abstract] OR "equal*" [title/abstract]) AND ("Delivery of Health Care"[Mesh] OR "Healthcare Financing"[Mesh] OR "Health Care Sector"[Mesh] OR "Quality Assurance, Health Care"[Mesh] OR "Quality of Health Care"[Mesh] OR "Health Care Quality, Access, and Evaluation"[Mesh])

Table 2. Data extraction criteria

Item	Description
Citation	First author and year
Location	Country in SSA
Population	Description of the population
Study design	Description of the methodology, statistical analysis of the study and type of data collection tool
Equity stratifier	Description of one or more of the equity stratifiers: income, educational attainment, gender, age, ethnicity or place of residence
Primary health care dimension	Description of the dimension: universal accessibility and coverage on the basis of need, comprehensive quality care with emphasis on the prevention and promotion, community involvement
Relevant findings	Description of the main findings of the study
Quality assessment	Excellent, good and fair

Figure 1. PRISMA flowchart of the data extraction process and search results

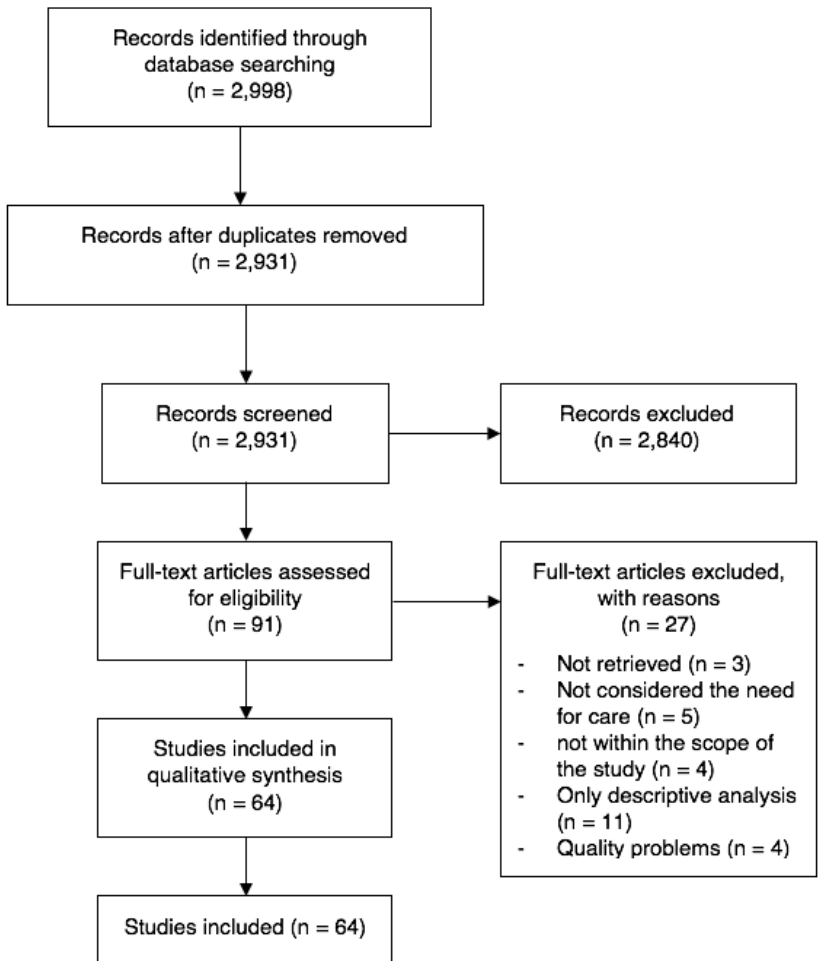


Figure 2. Research by first authors' country of affiliation and funding of the study

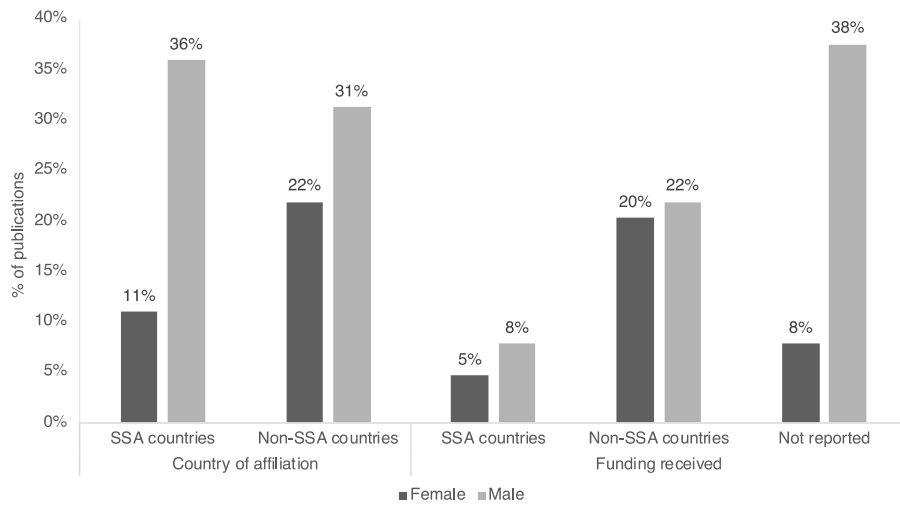


Figure 3. Number of publications by SSA country

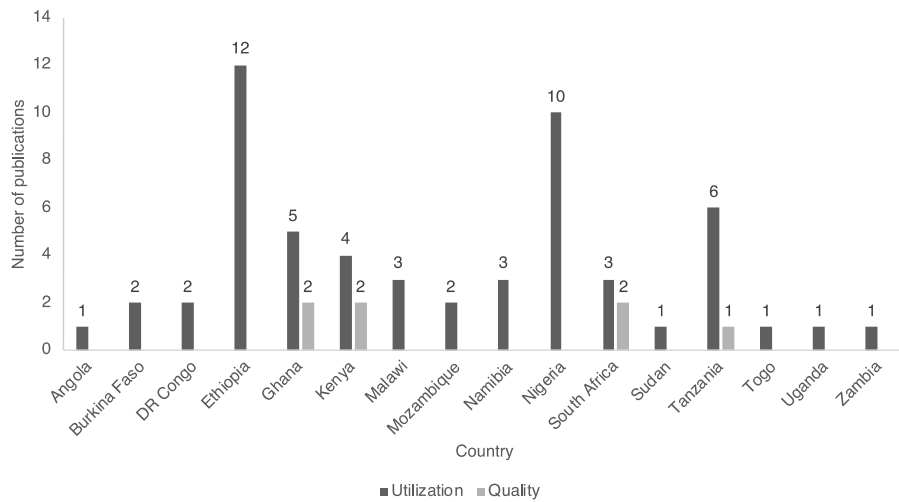


Table 3. Utilization of primary health care

Citation	Location	Population	Study design (type of data collection tool)	Equity stratifier	PHC dimension	Relevant findings	Quality
Oryema et al. (2017)	Uganda, Hoima district	Children aged 10–24 months (n= 476)	Survey, multivariate logistic regression (external data collection tool)	No	Utilization of routine child immunisation	No differences in the use of immunisation services by gender, maternal age, occupation of caretakers and educational attainment	Good
McCarthy et al. (2017)	Togo, Kozah district	Women aged 18–49 years caregivers of children less than 5 years (n= 1,075)	DHS survey and 2010 Multiple Indicator Cluster Survey (MICS), multivariate logistic regression (external data collection tool)	No	Utilization of postnatal care check, routine child immunisation, antimalarial treatment	Higher utilization by the women (and the children) in a wealthier position	Fair
Mtowa et al. (2017)	Tanzania, Kilombero district	Adults 50 years and older (n= 1,708)	Ifakara MZIMA cohort including adults aged 15 years and above, lodged in the Ifakara Health Demographic Surveillance System (HDSS) Survey, multivariate logistic regression (national data collection tool)	No	Utilization of HIV testing	No differences by gender, ethnicity, and occupation. Higher testing rates among higher educational attainment and lower testing by older than 65 years old,	Good
Sibeudu et al. (2017)	Nigeria, Anambra state	Caregivers of children less than 5 years (n= 338)	Administered Survey, multivariate logistic regression (national data collection tool)	No	Utilization of routine child immunization	Higher routine child immunization by the children in a wealthier position	Good
Bayham et al. (2017)	Mozambique, Zambezia province	Children aged 6–59 months (n= 2,317)	Household survey that was conducted as part of the Ogumaniha project funded under USAID Survey, multivariate logistic regression (external data collection tool)	No	Health facility utilization after one of the following three common childhood illnesses: diarrhoea, respiratory illness or fever	No differences by gender. Lower utilization by older children for respiratory illness. Higher educational attainment of the mother and ownership of a radio was associated to higher likelihood of utilization of the services	Good

Mezmur et al. (2017)	Ethiopia	Women aged 18–49 years (2000, n=7,917; 2005, n=7,273; 2011, n=7,836)	Ethiopia Demographic and Health Surveys, concentration index (external data collection tool)	Wealth	Utilization of antenatal care visits, tetanus injection, facility delivery	Persistent and widening pro-rich inequalities in facility delivery in the period of study; Also, there are inequalities in the uptake of four or more antenatal care visits and two or more doses of tetanus vaccine, but they decreased over the period of study	Excellent
Larsen et al. (2016)	Tanzania, Morogoro and Pwani region	Women aged 18–49 years (n=907)	Health and Demographic Surveillance System (HDSS) platforms of Ifakara Survey, multinomial logistic regression (national data collection tool)	No	Utilization of the continuum of maternal health services (antenatal care, facility delivery, postpartum care)	No differences by age and educational level. Women in wealthier position more likely to use the continuum of maternal health services.	Good
Wabiri et al. (2016)	South Africa	Women aged 15–55 years that had a child in the past 2 years (2008, n=1,310; 2012, n=1,648)	South African National HIV Surveys, relative and slope index of inequality; and concentration index (national data collection tool)	Wealth	Utilization of antenatal care, facility skilled delivery and HIV testing;	Widening pro-rich inequalities in the use of antenatal care and persistent pro-rich inequalities in the facility skilled and HIV testing	Excellent
Nlooto and Naidoo (2016)	South Africa, KwaZulu-Natal province	Adults older than 18 years (n=1,748)	Administered Survey, multivariate logistic regression (national data collection tool)	No	Utilization of traditional medicine	Lower use of traditional medicine, prior to ART therapy, among women and higher educational attainment. No differences by age. Higher use of traditional medicine, prior to ART therapy, among black people and those who have higher income.	Good

Fagbamigbe and Idemudia (2016)	Nigeria	Women aged 18–49 years (n=6,299)	Nigeria National HIV Survey, multivariate logistic regression (national data collection tool)	No	Utilization of antenatal care	Higher antenatal care by women in wealthier position, higher educational attainment and Igbo. No differences in the use by place of residence (urban, rural). Lower utilization by women older than 35 years.	Excellent
Ataguba et al. (2016)	Nigeria	Children aged 12–59 months (n=34,859)	Core Welfare Indicators Questionnaire Survey, conducted by the Nigerian National Bureau of Statistics. concentration index (national data collection tool)	Wealth	Utilization of routine child immunization	Pro-rich inequalities in full immunization, the distribution is consistent between place of residence (zones and urban, rural areas) Partial and never immunized children are concentrated among children in lower wealth position, higher concentration of never immunized in north and south west	Good
Saeed et al. (2016)	Ghana	Adults 50 years and older (n=5,573)	WHO SAGE Global Ageing and Adult Health for Ghana, multinomial logistic regression (external data collection tool)	Gender	Utilization of traditional medicine	For women, higher use of traditional medicine by those in higher educational attainment, lower use by wealthier positions. For men, higher use by self-employed and lower use by wealthier positions. No differences by age for women and men	Good
Johnson et al. (2016)	Ghana	Women (n=12,288)	Ghana Demographic and Health Surveys, concentration index and multilevel logistic regression (external data collection tool)	Wealth	Utilization of facility skilled delivery	Persistent pro-rich inequalities in the utilization of facility skilled delivery	Excellent

Memirie et al. (2016)	Ethiopia	Households (2005, n= 9,861; 2011, n= 11,654)	Ethiopia Demographic and Health Surveys, concentration index (external data collection tool)	Wealth	Utilization of facility skilled delivery medical, treatment for diarrhoea, measles immunizations and modern contraceptive usage	Persistent pro-rich inequalities for all the services among women and children	Excellent
Hailu et al. (2016)	Ethiopia, Oromia region	Households (n= 6,069)	Cluster randomized controlled trial, generalized concentration index (unclear data collection tool)	Wealth	Utilization of preventive measures for malaria (long-lasting insecticidal nets and indoor residual spraying)	Pro-rich inequalities of long-lasting insecticidal nets and no differences in the indoor residual spraying	Excellent
Begashaw et al. (2016)	Ethiopia, Esera district	General population (n= 377)	Survey, multilevel logistic regression (national data collection tool)	Place of residence (urban and rural)	Utilization of health care (primary health care is analysed together with hospital care)	In urban areas, no differences in the use for educational attainment or income; In rural area, higher utilization by those in wealthier position and no differences by educational attainment	Good
Kante et al. (2015)	Tanzania, Kilombero, Ulanga and Rufiji districts	Women aged 15-49 years caregivers of children under 5 years (children, n= 2,077; caregivers, n= 1,643)	Survey, multinomial logistic regression (unclear data collection tool)	No	Health facility utilization after one of the following two common childhood illnesses: diarrhoea or fever	Higher utilization for diarrhoea by children aged 2-5 years, those in higher educational attainment and children living in urban area. No differences for fever	Good
Fawole and Adeoye (2015)	Nigeria	Women aged 15-49 years (n= 4,590)	Nigeria Demographic and Health Survey, logistic regression (external data collection tool)	No	Utilization of antenatal care and facility skilled delivery	No differences by age. Higher utilization of both services in urban areas and those in wealthier position. For facility skilled delivery, higher use for women in higher educational attainment and lower utilization by Igbo and Yoruba	Good

Kangmen naang et al. (2015)	Namibia	Women aged 15–64 years (n= 6,542)	Namibia Demographic and Health Survey, logit regression (external data collection tool)	No	Utilization of cervical cancer screening	Higher utilization of women in higher educational attainment, wealthier position; no differences between urban and rural areas	Good
Egondi et al. (2015)	Kenya, Nairobi	Children aged 12– 23 months (n= 382)	Nairobi second Cross- Sectional Slum Survey, concentration index (national data collection tool)	Wealth	Utilization of routine child immunization	Lower immunization among children in lower wealth position	Good
Wilunda et al. (2015)	Ethiopia, Oromia region	Women aged 15–64 years (n= 500)	Administered Survey, multivariate logistic regression (external data collection tool)	No	Utilization of antenatal care and facility skilled delivery	For antenatal care, lower use among older women. No differences among place of residence, ethnicity and educational attainment. Higher utilization of women in wealthier position For facility skilled delivery, higher use in urban areas and among wealthier positions. No differences by age, ethnicity and educational attainment	Good
Onarheim et al. (2015)	Ethiopia	Women aged 15–64 years (family Planning, n= 7,422; antenatal Care n= 7708; facility skilled delivery n= 7702)	Ethiopia Demographic and Health Survey, multivariate logistic regression (external data collection tool)	No	Utilization of family planning, antenatal care and facility skilled delivery	Women in lower wealth position use less the services; Higher use by those in higher educational attainment. For facility skilled delivery, women living in urban areas higher use	Excelle nt
Zollner et al. (2015)	Burkina Faso, Nouna district	Households (n= 1,094)	Survey, multivariate logistic regression (unclear data collection tool)	No	Utilization of preventive measures for malaria (long- lasting insecticidal nets)	No differences by wealth position	Good

Phiri and Ataguba (2014)	Zambia	General population (n= 14,403)	Zambia Living Conditions and Monitoring Survey, concentration index (national data collection tool)	Wealth	Utilization of health care (disaggregate analysis for primary health care)	The utilization of primary health care is pro-poor	Excellent
Exavery et al. (2014)	Tanzania, Kilombero, Ulanga and Rufiji districts	Women aged 15–64 years (n= 915)	Survey, multilevel logistic regression (unclear data collection tool)	No	Utilization of facility delivery	Higher utilization by women in wealthier position. Lower use by Sukuma women. No differences by place of residence	Good
Yao et al. (2014)	Mozambique, Gaza province	Adult women (n= 1,025)	Survey, multivariate logistic regression (unclear data collection tool)	No	Utilization of HIV testing	Less utilization by older people. More utilization by higher educational attainment and household wealth	Good
Ustrup et al. (2014)	Malawi	Children aged 0–59 month (n=1,981)	Administered Survey, multivariate logistic regression (external data collection tool)	No	Health facility utilization after one of the following two common childhood illnesses: cough or fever	Less utilization for children older than 12 months and those in lower wealth position. No differences by gender and place of residence.	Good
Asamoah and Agardh (2014)	Ghana	Women aged 15–24 years (2003, n=649; 2008, n= 518; 2014, n= 923)	Ghana Demographic and Health Surveys, regression-based Total Attributable Fraction (external data collection tool)	No	Utilization of antenatal care and facility skilled delivery	For antenatal care, no differences by place of residence. Lower use for women with educational attainment and lower wealth position. Persistent inequalities in facility skilled delivery in rural area, for the women with lower educational attainment and in lower wealth position	Excellent

Asamoah et al. (2014b)	Ghana	Women aged 15–24 years (1988, n=2,716; 1993, n=1,980; 1998, n=2,376; 2002, n=2,777; 2008, n=2,147)	Ghana Demographic and Health Surveys, regression-based Total Attributable Fraction (external data collection tool)	No	Utilization of antenatal care and facility skilled delivery	Persistent but declined inequalities in lower utilization of antenatal care for those living in rural area and lower educational attainment. For facility skilled delivery, the inequalities are persistent and maintained over time, for lower use among those living in rural area	Excellent
Yesuf et al. (2014)	Ethiopia	Women aged 15–49 years (2000, n=6,860; 2005, n=6,405; 2011, n=7,591)	Ethiopia Demographic and Health Surveys, Generalized Linear Models (external data collection tool)	No	Utilization of facility delivery	Pro-rich inequalities in the utilization of facility delivery	Fair
Tarekegn et al. (2014)	Ethiopia	Women aged 15–24 years (n=7,908)	Ethiopia Demographic and Health Survey, multivariate logistic regression (external data collection tool)	No	Utilization of antenatal care, facility skilled delivery and postnatal care	For antenatal care, higher use for Amhara, Guragie and Tigrie women, from urban area, higher educational attainment and wealthier position. Lower use for Sidama and Wolaita women. No differences for Sidama women. For facility skilled delivery, higher use for Guragie women, from urban areas, higher educational attainment and wealthier position. Lower use for Sidama, Tigrie and Wolaita women. No differences for Amhara and Oromo women. For postnatal care, higher use for women in urban areas, higher educational attainment and wealthier position. No differences for ethnical group.	Excellent

Fekadu and Regassa (2014)	Ethiopia	Women aged 15–24 years (n= 6,641)	Ethiopia Demographic and Health Survey, multivariate logistic regression (external data collection tool)	Place of residence (urban and rural)	Utilization of facility skilled delivery	In both areas, higher utilization for women with higher educational attainment and no differences by age.	Fair
Chenge et al. (2014)	Democratic Republic of the Congo, city of Lubumbashi	General population (n= 251)	Administered Household Survey, generalized linear model (national data collection tool)	No	Utilization of health care (primary health care is analysed together with hospital care)	No differences by gender, age, educational attainment and main occupation	Good
Oliveira et al. (2014)	Angola, Bom Jesus	Children under 5 years (n= 1,209)	Survey, log-binomial analysis (unclear data collection tool)	No	Utilization of routine child immunisation	Higher vaccination for children older than 1 year. No differences by place of residence or literacy	Fair
Ononokpo et al. (2014)	Nigeria	Women aged 15–49 years (n= 17,846)	Nigeria demographic and health survey, multilevel logistic regression (external data collection tool)	No	Utilization of skilled postnatal care	Higher utilization of skilled postnatal care by higher educational attainment and more wealth. Also, Igbo, Yoruba and Hausa/Fulani/Kanuri women. No differences by age	Good
Van Malderen et al. (2013)	Kenya	Children under 5 years (n= 6,059)	Kenya Demographic and Health Survey, concentration index (external data collection tool)	No	Utilization of facility skilled delivery and routine child immunization (measles)	For facility skilled delivery, higher utilization by women in wealthier positions and higher educational attainment. Lower utilization by Kamba, Luhya, Luo and Mijikenda women. No differences by age and place of residence. For child immunization, no differences by sex, age, place of residence, wealth or educational attainment. Higher utilization in older children.	Good

Yesuf and Calderon-Margalit (2013)	Ethiopia	Women aged 15–49 years (2000, n= 7,245; 2005, n= 6,589; 2011, n= 7,764)	Ethiopia Demographic and Health Survey, multivariable logistic regression (external data collection tool)	No	Utilization of antenatal care	Widening pro-rich inequalities in the utilization of antenatal care	Good
Birmeta et al. (2013)	Ethiopia, Holeta town	Women aged 15–49 years (n= 419)	Survey, multivariate logistic regression (national data collection tool)	No	Utilization of antenatal care and facility skilled delivery	For antenatal care, lower utilization by older women in less wealthier position. Higher utilization by women with some educational attainment. For facility skilled delivery, higher utilization by women with more wealth and some educational attainment. No differences by age	Good
Feinstein et al. (2013)	Democratic Republic of the Congo, city of Kinshasa	Women of childbearing age older than 18 years (n= 1,221)	Survey, logistic regression (unclear data collection tool)	No	Utilization of antenatal care	Higher utilization by those with household assets (electricity, radio, television and telephone). No differences by ethnic group	Good
Ye et al. (2012)	Nigeria, Kano state	Households (n= 987)	Survey, concentration index (unclear data collection tool)	Wealth	Utilization of preventive measures for malaria (insecticide-treated net)	No differences by wealth	Good
Abebe et al. (2012)	Malawi	Children aged 10– 60 months (n= 17,868)	Welfare Monitoring Survey in Malawi, multilevel logistic regression (national data collection tool)	No	Utilization of routine child immunization	Higher utilization by older children. No differences by gender, educational attainment or wealth	Good
Antai (2012)	Nigeria	Children older than 12 months (n= 24,910)	Nigeria Demographic and Health Survey, multilevel logistic regression (external data collection tool)	No	Utilization of routine child immunization	Higher utilization by Yoruba girls. Lower utilization by lower educational attainment of the mother	Good

Zere et al. (2011)	Namibia	Women aged 15–49 years (Namibia Demographic and Health Survey, concentration index (external data collection tool)	No	Utilization of facility skilled delivery	Higher utilization by wealthier position, higher educational attainment and urban area	Good
De Allegri et al. (2011)	Burkina Faso, Nouna District	Women that had completed their pregnancy in the 12 month prior to the survey (n= 429)	Survey, multivariate logistic regression (unclear data collection tool)	No	Utilization of antenatal care and facility delivery	For antenatal care, lower utilization by women with more wealth; and Samo and Marka women. No differences by age and literacy. For facility delivery, no differences by age, wealth position and literacy. Higher utilization by Mossi, Peuhl and Marka women	Good
Semali (2010)	Tanzania	Children aged 12-23 months (1990, n= 1,617; 1996, n= 1,241; 2004, n= 1,613)	Tanzania Demographic and Health Survey, (external data collection tool)	No	Utilization of routine child immunization	Higher utilization in urban area and lower utilization by those without any educational attainment	Fair
Spangler and Bloom (2010)	Tanzania, Kilombero and Ulanga Districts	Women older than 14 years (n= 1,150)	Survey (external data collection tool)	No	Utilization of facility delivery	Higher utilization by women with higher educational attainment, women in less dominant ethnic group and those who had iron roof and radio	Good
Zere et al. (2010)	Namibia	Women (n= ?)	Namibia demographic and health survey, concentration index (external data collection tool)	Wealth	Utilization of antenatal care, facility skilled delivery and postnatal care	Pro-rich inequalities of antenatal care, facility skilled delivery and postnatal care	Fair
Babalola and Fatusi (2009)	Nigeria	Women older than 15 years (n= 2,158)	Nigeria National HIV/AIDS and Reproductive Health Survey, generalized linear model (national data collection tool)	No	Utilization of antenatal care, facility skilled delivery and postnatal care	In general, higher use by women with higher educational attainment, wealthier position from urban areas. No diff. by ethnic group for antenatal care and higher use by Igbo women of facility skilled delivery and postnatal care	Good

Antai (2009)	Nigeria	Children older than 12 months (n= 3,731)	Nigeria Demographic and Health Survey, multilevel logistic regression (external data collection tool)	No	Utilization of routine child immunization	Lower utilization by lower wealthier position and south east and south. Higher utilization by Igbo children and no differences by sex	Good
Zere et al. (2007)	Malawi	Women and children (n= ?)	Malawi Demographic and Health Survey, concentration index (external data collection tool)	Wealth	Utilization of routine child immunization, utilization after one of the following two common childhood illnesses: acute respiratory infection or diarrhoea; antenatal care or facility skilled delivery	Persistent pro-rich inequalities for the services studied	Fair
Noor et al. (2007)	Kenya, Kwale, Bondo, Makueni and Greater Kisii district	Households (n= 2,761)	Survey to a longitudinal cohort of children under 5 years, concentration index (unclear data collection tool)	Wealth	Utilization of preventive measures for distribution of malaria (insecticide-treated net)	No differences in net use	Good
Onwujekwe et al. (2006)	Sudan, Gezira and Khartoum states	Adults (n= 720)	Survey, logistic regression (unclear data collection tool)	No	Utilization of preventive measures for malaria (indoor residual house spraying, space spraying, insecticide-treated nets)	For indoor residual house spraying, higher utilization by households that the head attended school. For space spraying, higher utilization by households in wealthier position and households that the head attended school. For insecticide-treated nets, higher utilization by households in a wealthier position	Good

Onwujekwe (2005)	Nigeria, Anambra and Enugu State	General population (n= 1,586)	Survey, multivariate logistic regression (unclear data collection tool)	No	Utilization of primary health care after one of the following six illnesses: malaria, tuberculosis, upper tract respiratory diseases, HIV/AIDS, onchocerciasis or diarrhoea	Higher utilization by people in wealthier position. No differences by age, sex and educational attainment	Good
Taffa et al. (2005)	Kenya, Nairobi	Children aged 0-54 months (n=264)	The Nairobi Urban Demographic Surveillance System (NUDSS) pilot study Survey, multivariate logistic regression (national data collection tool)	No	Utilization of health care (primary health care is analysed together with hospital care)	Higher utilization by younger children and those whose mother worked (outside home)	Fair
Buor (2004)	Ghana, Ashanti Region	Adults older than 18 years (n= 650)	Household Survey, multiple regression (national data collection tool)	Gender	Utilization of health care (primary health care is analysed together with hospital care)	Similar pattern for women and men, those in wealthier position and higher educational attainment were more likely to use health care	Good
Zere and McIntyre (2003b)	South Africa	Adults older than 18 years (n= ?)	South Africa Living Standards Survey and October household survey, concentration index (national data collection tool)	Wealth	Utilization of health care (disaggregate analysis for primary health care/public-health facilities)	Pro-poor utilization of health care	Fair
Mekonnen and Mekonnen (2003)	Ethiopia	Woman aged 15-49 years (n= 7,978)	Ethiopia Demographic and Health Survey, multivariate logistic regression (external data collection tool)	Place of residence (urban and rural)	Utilization of antenatal care and facility skilled delivery	In both areas and for both services, higher utilization by women with higher educational attainment and no differences by age.	Good

Table 4. Quality of primary health care

Citation	Location	Population	Study design (type of data collection tool)	Equity stratifier	PHC dimension	Relevant findings	Quality
Larson et al. (2017)	Tanzania, Pwani region	Women 15 years and older (n=1,096)	Three sources—household interviews, health worker interviews and facility audits. Household Survey, multivariate logistic regression (external data collection tool)	Wealth	Quality of facility skilled delivery	Women in wealthier position more likely to deliver in good quality	Good
Sharma et al. (2017)	Kenya	National representative population of the catchment area	Kenya Demographic and health survey (DHS), Demographic data extracted from: the Oxford Poverty and Human Development Initiative and the 2014 population-representative DHS. multivariate logistic regression (external data collection tool)	Multidimensional poverty index (educational attainment; child mortality and nutrition; and standard of living - cooking fuel, sanitation, water, electricity, floor and asset ownership)	Quality of antenatal care and facility skilled delivery in Kenya across three dimensions: infrastructure and clinical process quality of antenatal and delivery care	Generalized deficiencies in quality care, women in wealthier position slightly likely to have better quality	Excellent
Nguhiu et al. (2017)	Kenya	Women aged 15-49 years (2003, n=8195; 2008, n=8,444; 2014, n=31,079) Children under 5 years (2003, n=6,102; 2008, n=5,852; 2014, n=19,563)	Kenya Demographic and Health Surveys and the Kenya Service Provision Assessment Surveys, relative concentration index (external and national data collection tool)	Wealth	Effective coverage of maternal and child health services: family planning, antenatal care, facility skilled delivery and perinatal care, breastfeeding, child immunisation, management of diarrhoea, respiratory illness/fever, use of insecticide-treated nets	Pro-rich inequalities in skilled delivery and perinatal care, immunisation services, antenatal care and family planning. Pro-poor inequalities in breastfeeding, management of diarrhoea and use of insecticide-treated nets	Excellent

Ayanore et al. (2016)	Ghana	Women aged 15–49 years (n= 2,147)	Ghanaian Demographic and Health Surveys, binary/multinomial logistic regression (external data collection tool)	No	Quality of antenatal and postnatal care; facility utilization during pregnancy and delivery; medication received	Older women in the lower wealth position, from rural areas more likely to receive inadequate care. Also, no differences by educational attainment and some differences between regions	Good
Hasumi and Jacobsen (2014)	South Africa	General population (n= 23,562)	General Household Survey, conducted by Statistics South Africa (SSA) multivariate logistic regression (national data collection tool)	Race/ethnicity	Quality of the health care	For Black Africans, higher quality problems for adults older than 60 years, from urban areas and higher income. For White, higher quality problems for adults older than 60 years and no differences by place of residence or income. Coloured and Indian/Asian, no differences in the quality of care	Good
Asamoah et al. (2014a)	Ghana	Women aged 15–49 years (n= 2,144)	Ghana Demographic and Health Survey, carried out by the Ghana Statistical Service and the Ghana Health Service multivariate logistic regression (external data collection tool)	No	Quality of facility skilled delivery	Lower probability of skilled delivery for younger women, from rural areas in a lower wealth position and lower educational attainment	Good
Myburgh et al. (2005)	South Africa	General population (n= 1,928)	Kaiser Household Survey (external data collection tool)	No	Quality of health care	Higher probability of reporting better quality for white population and those in the wealthiest position	Good

Article 3

Llop-Gironés A, Julià M, Chicumbe S, Dulá J, Odallah AAP, Alvarez F, et al. [Inequalities in the access to and quality of healthcare in Mozambique: Evidence from the household budget survey](#). Int J Qual Heal Care. 2019 Oct 31;31(8):577–82. DOI: 10.1093/intqhc/mzy218

Article 4

Llop-Gironés A, Cash-Gibson L, Chicumbe S, Alvarez F, Zahinos I, Mazive E, et al. [Health equity monitoring is essential in public health: lessons from Mozambique.](#) Global Health. 2019 Dec 18;15(1). DOI: 10.1186/s12992-019-0508-4

VI. DISCUSSION

The thesis aimed to give a critical overview of the health care and health inequalities with a focus on the Mozambican case. In this section, first we will summarize the main results of the study that analyse the magnitude and role of social determinants of health in Mozambique, second, we will summarize the findings of the studies that examine the health care inequalities in SSA and also in Mozambique and, third we will summarize the results of the data source mapping. The summary of the main results is followed by a general discussion of the study findings, an analysis of the strengths and limitations, and a short description of the main research challenges and policy implications derived from this thesis.

1. Social determinants of health inequalities in Mozambique

Part of the overarching argument reflected in this dissertation is that social determinants of health framework provides a much wider understanding of the health inequalities in Mozambique beyond the discussions around the access to basic services. Results of this thesis suggests that structural factors (proxied by fixed-effects of place of residence, year and season) are a dominant predictor of health inequalities in Mozambique, and that access to basic services or material conditions are unlikely to be a main cause of differences in health outcomes in Mozambique. Our research also contributes to a better understanding of how health inequalities in women, children, and elderly population arise in Mozambique.

Very few studies in the SSA context have analysed the role of social determinants in producing poor health (Ataguba *et al.*, 2015). The study of Ataguba et al. analyses the relative inequalities for the South African case using data for 2012/13. They found that employment status and social protection, housing and access to basic services were factors that significantly contributed to the

disparities in good health. However, it is important to mention that South Africa and Mozambique are very different countries. The working profile of Mozambique is majoritarian of subsistence agriculture and the country is still developing the social protection law. Despite these results, our study confirms the general international pattern of inequalities (Chung and Muntaner, 2006, 2007).

In SSA, two studies (Andoh *et al.*, 2006; Atti and Gulis, 2017) have further analysed the political determinants of health. On one hand, Andoh *et al.* (2006) analysed the correlation between national income, political status and mortality due to HIV/AIDS in all African countries and they found national net income per capita (obtained after subtracting debt from national income) as one of the predictors of mortality. Mozambique continues to be a country dependent on aid and government debt to GDP has increased from 42.1% in 2008 to 55.4% in 2014, based on data from the Banco de Moçambique. Despite we have not studied mortality, the results of our study indicate that persistent differences exist in health status between geographical areas, between men and women, and, among children and older population, and that these differences appear to be widening.

On the other hand, Atti and Gulis (2017) showed for SSA countries that political conflict and political participation were stronger predictors of slow progress in under-5 and maternal mortality rate while regime types was a weaker predictor of slow progress in under-5 mortality rate. In Mozambique, the political life, after two decades of multi-party democracy and three general elections is dominated by the two parties that fought military, FRELIMO (ruling party) and RENAMO. The electoral support of the two parties shows distinct geographical concentration, FRELIMO enjoy hegemony in the three southern provinces, and in some parts of the northern provinces Tete, Niassa and Cabo Delgado, and RENAMO have hegemony mainly in the central area of Manica, Sofala, Zambézia and Nampula provinces. Additionally, the political participation of civil society groups is stronger in the

southern area, particularly in the capital city (Maputo). Of the 4,853 non-state and not-for-profit institutions legally recognised in Mozambique, the geographical distribution, the employment generated, and the funds received are irregular and unequal, where more than half of the employees are concentrated in Maputo (AfriMAP and Open Society Initiative for Southern Africa, 2009). This is in line with the results of our study that despite improvements in the general health status over the years of study, significant worse health outcomes are shown in rural and central area of the country.

We also found that women face poorer health than men. This is a common finding in the literature (Krieger, 2003; Malmusi *et al.*, 2012). Women's poorer health is unfair. Avoidable gender inequalities are attributable to systematic discrimination, where women's subordinate power position in society is a consequence of a patriarchal order (Krieger *et al.*, 2005). For example, results from Central American countries show a clear pattern of association between poor self-perceived and mental health and married women in informal employment who had care responsibilities with long working hours or part-time jobs (Lopez-Ruiz *et al.*, 2017). Also, results from large studies in Europe show that policies that support women are related to lower levels of gender inequality in terms of health (Palència *et al.*, 2017). In the case of Mozambique, Arnfred (2011) argues that most of the changes brought about by modernizing life in rural Mozambique favours male power, and disfavours women. Yet, the general premise of male domination/female subordination cannot be taken for granted in the Mozambican context, particularly in the matrilineal north. Mozambique has a political, institutional and legal framework to address gender inequalities, however, their implementation is weak (Ministério de Género, Criança e Acção Social, 2016a).

The study also points that the population less than 5 years old and more than 45 years face poorer health and women over 45 years old display the greatest health inequalities. Most of the attention in the health interventions in SSA has been in maternal

and child health because of the high burden of illness. However, for the case of Mozambique, this study showed that health inequalities worsen with age and among women. The last report on aging of the World Health Organization (2015a) shows that while fertility rates are falling, the proportion of older population in SSA will continue to grow in the future. Specific policies and legal frameworks need to be put in place to increase the protection among older population; in that sense the recently designed national strategy for social protection may represent an opportunity to address health inequalities in a broader fashion (Ministério de Género, Criança e Acção Social, 2016b).

Thus, in answering the first three research hypothesis, evidence suggests that structural factors are main cause of poor health in Mozambique and, despite health inequalities showed a general declining trend, children, elder women and population living in rural areas are being left behind. A policy implication of this research is that a narrow focus of health policy on selected services ignores the underlying economic and social context and their role in producing well-being or poor health, in this regard, an extra focus on intersectoral actions is needed.

2. Health care inequalities with a focus on Mozambique

Another core argument of the present thesis is that a comprehensive view of the health system based in PHC is fundamental for addressing health care inequalities. The main result of the systematic review is that in SSA the access to and quality of PHC is mainly determined by the social position, rather than by the need. The results of the review also show a persistent focus of the academic research for the evaluation of the equity in particular health interventions and programmes, which is consistent with the prevailing health model of selective PHC (Cueto, 2004). These studies show inequalities in the access to and quality of care over time favouring in general, those with more wealth, higher

educational level attainment and population from the urban area. While results are not uniform, it is possible to discern a pattern of limited progress in the provision of care which can be partially attributable to inconsistent health policies, weak state regulations, reliance on external aid, low domestic budgetary allocations for the health sector and ineffective health sector reforms (Asakitikpi, 2015; Beste and Pfeiffer, 2016; Gilson *et al.*, 2017).

Only two studies did a comprehensive evaluation of PHC (Zere and McIntyre, 2003b; Phiri and Ataguba, 2014). Both studies analysed inequalities in the access to PHC using a national representative survey and found pro-poor inequalities in the utilization of health services in Zambia (Phiri and Ataguba, 2014) and South Africa (Zere and McIntyre, 2003b). This distribution may indicate that health sector reforms have been ineffective in their role of increasing the equitable distribution of the access and quality of PHC within the countries. Some of the most popular measures adopted by SSA countries has been the definition of a basic package of care that normally exclude expensive specialized care, maintenance of services fees with partial exclusion for vulnerable groups, privatization of certain areas of public hospitals and experimentation with health insurance schemes (Wang and Ramana, 2014; Kusi *et al.*, 2015). These measures, clearly directed to increase the domestic revenue mobilization, have an impact in the inequitable distribution of care received. As studies in Latin America have shown (Garcia-Subirats *et al.*, 2014a, 2014b), an interpretation of the results of these studies is that the population in a disadvantaged position are using more PHC because they cannot reach specialist care.

The results of this review can also be useful for the Mozambique's health sector reform and the decisions on benefit coverage and entitlement. The GTF in Mozambique is considering different financing schemes for the population (i.e., social health insurance, community based health insurance and private health insurance), an increase in the user charges, as well as the definition of a basic package of care (Health Financing Strategy Technical

Working Group, 2016). These actions are consistent with the current health sector reforms adopted in other SSA, and potentially may increase the domestic revenues; however, at the same time health care inequalities will increase in the country. Some experiences in the SSA region as the case of Ghana with the NHIS (single pool single payer system) may be more adequate for the Mozambican case. However, there is not any reason to believe that NHIS is more affordable than NHS (i.e. UK model) and both countries need to take action regarding the definition of limited packages of care, the maintenance of services fees and the privatization of certain areas of public hospitals,¹⁰ which have been shown that lead to health care inequalities.

In terms of governance and financing, the main aspects to consider for a more equitable provision of care are the following: First, there is a need to strengthen the health system by providing a solid national health policy framework for the development of the national health service, delimiting the role of private providers in the public health system. Second, inconsistencies in the formulation and implementation of health policies and strategic plans should be reduced; in this regard, it is crucial the collaboration and engagement of the vertical funds under the Ministry of Health. Third, the participation of Local Advisory Councils (Conselhos Consultivos Locais) should be guaranteed in the process of planning and implementing district plans to help in identifying collective needs and incorporating them into district plans. And, fourth, the country should consider other forms of increasing domestic revenue mobilization for health, this includes increasing domestic taxation on tobacco, alcohol, junk food, and luxurious products. Also, debt relief is a mechanism to increase the public budget.

In the present thesis we have also empirically investigated the inequalities in the access to and quality of health care in Mozambique. Our results show the persistence of inequalities in the access to and quality of care for women and men. Despite about

¹⁰ Currently, only few public hospitals in Mozambique, such as the central hospital of Maputo, have private sections within them.

70% of the population in Mozambique use the public health care system, women and men of less advantaged quintiles have fewer chances of using health care compared to their counterparts in the most advantaged quintile, also women and men living in rural north and rural centre are less likely to use health care. Despite in Mozambique THE has risen in real terms between 2009 and 2013 (The World Bank, 2015b), this study corroborates the persistence of health care inequalities disfavouring the population from rural areas and economically disadvantaged Mozambicans, results that are consistent with the study of Anselmi *et al.* (2015) using data from 2008. This may suggest that an increase of the vertical funds (thus, selective medical interventions) main reason of the increase of THE, does not help in the shift for a more equitable distribution of the health care.

We found no significant differences in the quality received by socioeconomic position of women. Men in a disadvantaged position report less chances of accessing quality care compared to men of advantaged position. The results in the literature of SSA are inconclusive, while Larson *et al.* (2017) and Sharma *et al.* (2017) found significant inequalities favouring the wealthiest women, Lee *et al.* (2016) found no statistically significant association using women's education as social position's proxy. In this study the respondents considered major quality problems the lack of medicines and long waiting times, these results are in line with Wagenaar *et al.* (2014) that reported the existence of shortages of essential health products such as drugs and health technology that affects the majority of the households that are far from the district capital. Also, despite health professionals have grown 72% between 2007 and 2015 (Ministerio da Saúde, 2016), the ratio of medical doctors and nurses is very low (54.8 per 100,000 inhabitants) compared to the 230 per 100,000 inhabitants recommended by the WHO. With regard to the geographical area, women living in the northern area of Mozambique show significant less probabilities of reporting quality problems than those living in urban zones of southern area. Men have less probabilities of reporting quality

problems if living in northern and central area of the country compared to urban south, which may indicate sustained lack of progress in the improvement of the quality of care, for example, rural areas are the least staffed with 65 health professionals per 100,000 inhabitants (compared to 176 health professionals in urban areas) (Ministerio da Saúde, 2016). These findings require further research because, as the last joint report by the WHO, OECD and the World Bank show the “inaccurate diagnosis, medication errors, inappropriate or unnecessary treatment, inadequate or unsafe clinical facilities or practices, or providers who lack adequate training and expertise prevail in all countries” (WHO *et al.*, 2018). However, it is also important to remark that the presence of these inputs is not in itself an indicator of high-quality care (Kruk *et al.*, 2018), and the health needs, knowledge, and preferences of people should shape the health system response and make them more accountable.

Although significant vulnerable population groups are exempt of payment during the medical visits, we showed that about 80% of the population paid during their visits in the public sector and that the distribution of median payments within quintiles and geographical areas are similar for both sexes (1 Mt). This trend shows that most disadvantaged women and men are paying as much as most advantaged population for their visits, which may compromise the food security, household financial security and women's decision to seek health care (Johnson *et al.*, 2012).

In this study, we investigated the distribution of equitable health care by socioeconomic position and geographical area stratified by gender through an intersectional approach where we have simultaneously considered the interactions between different aspects of social position and identity (Hankivsky, 2012). This is an innovative approach in the health care literature of SSA since the empirical evidence tends to focus on specific interventions or population groups. However, extensive literature in high income countries (Redondo-Sendino *et al.*, 2006; Pinkhasov *et al.*, 2010; Vaidya *et al.*, 2011) and growing evidence in low and middle

income countries (Buor, 2004; Peltzer *et al.*, 2014) show gender differences in the access to health services.

Thus, in answering the first and second research questions concerning the systematic review, our results suggest that people with the same health needs, receive unequal access to and quality of PHC, depending on their social position. Also, in answering the fourth and fifth research hypothesis, our results suggest that there are socioeconomic inequalities in the use and quality of health care, however, further analysis are needed in order to deepen in the knowledge of the determinants of access, and particularly, the quality provided to the Mozambican population.

3. Health information systems and gaps for monitoring health inequalities in the Mozambican context

In this thesis we also explored the health information systems (HIS) for the case of Mozambique reinforcing the idea that HIS are key to be able to study health inequalities, monitor and evaluate them over time; however, in low income countries, such as the case of Mozambique, major difficulties to study health inequalities exist due to information gaps in their national HIS.

We systematically mapped the available data sources in Mozambique in order to monitor progress towards health equity using the indicators of the SDG3 ‘Ensure healthy lives and promote wellbeing for all at all ages’. The results showed that none of the indicators can be fully disaggregated by the equity stratifiers (socio-economic position, education, sex, age, urban/rural, province and race/ethnicity). Progress towards improved health outcomes requires monitoring of how public health is being expanded to serve general population and the most disadvantaged population subgroups. Data source mapping enables the critical review of a range of data sources embedding an equity lens in the appraising of HIS at the national level and it also can be replicated at lower administrative levels (Hosseinpour *et al.*, 2018b).

Some research assessing the national health research systems in Guinea-Bissau, Gambia or Mali have shown that research in SSA depends to a greater extent to external donor funding, with strong dependencies on top-down policies and limited governmental support which prevent progress for a strengthened health information (Albert *et al.*, 2007; Palmer *et al.*, 2009; Kok *et al.*, 2012). A new momentum for strengthening national HIS has been built with the SDG and the ‘leaving no one behind’ agenda, however, political interests in the country may not consider the HIS as a priority. As Palmer *et al.* (2009) described, the promotion of national HIS should include that research is internally driven, owned by the country, focused on national priorities, and ensuring that research feeds into policy and practice to improve population’s health in the context of national development.

In Mozambique there are examples of successful programmes to strengthen the national capacity of the health information system. For example, the ongoing process to strengthen the civil registration and vital statistics (CRVS). The country has an urgent need for CRVS as the registration rate of children under five is estimated to be less than 50% (Ministério da Saúde *et al.*, 2011), and despite the urban and rural rates of registration are similar, and there are no differences among registration for girls and boys, more children among the richest quintile are registered (60.2% vs 42.3%) (Ministério da Saúde *et al.*, 2011). The progress on improving CRVS systems involves different ministries and national institutions such as Ministries of Justice, Constitutional and Religious Affairs, Ministry of Health, National Institute of Statistics and Ministry of Interior. Also, international partners (i.e. WHO and UNICEF) and donors (i.e. Canada). Currently, they are focusing on three key areas: legislative and policy review, registration of all vital events, including birth and death, and the interoperability between data management systems.

The answer to the last research question is that the data source mapping showed that there are gaps in the HIS to monitor health inequalities in Mozambique. The country has some

successful experiences in improving national HIS which may be encouraging in advocating for improving HIS for the monitoring and evaluation of health inequalities.

4. Strengths and Limitations

Strengths

The main novelty and at the same time a key challenge of this dissertation lies in the idea of widening more the scope of public health surveillance and monitoring in low income countries to include SDH and the comprehensive study of the health system. This field has been long dominated by a strong tradition of biomedical studies, focused on selective health services which hinder its expansion towards SDH, its contribution to health inequalities and the progress towards equitable health systems. Different points we want to highlight are the following.

First, assessing the role of the SDH and its contribution to health inequalities has been long time encouraged by public health organization (CSDH, 2008), and currently revitalized in the context of SDG and ‘leaving no one behind’ (United Nations, 2015a), however, evidence on health inequalities from low income countries continues to be scarce (Cash-Gibson *et al.*, 2018). A significant part of the thesis aimed at opening this field of knowledge for the case of Mozambique, under the premises of shifting the focus of the object of the study from the disease to its structural cause and encouraging the study of the socio-political context of the social determinants monitored.

Second, this thesis also encouraged the study of the health system from a comprehensive perspective as fundamental for addressing the current health care inequalities. In this regard, the review of the evidence of the equity in the access to and quality of PHC for the Mozambican’s neighbor countries helped to point out the challenges and gaps the Mozambicans may encounter in the next future with the health sector reforms put in place. Additionally,

the description of the health care inequalities allowed the understanding of the current state of the health system and suggested areas that require immediate action.

Third, the thesis stated that an intersectional approach is basic for the evaluation of the progress of a public health system in order to provide integral care to the population and particularly those in more need. This is an innovative approach in the health care literature of SSA. We believe that the study of the intersection of gender, socioeconomic position, and geographical area is relevant for public policies since the results of the study helped in identifying different dynamics in the health services offered to men and women. It can help to strengthen the health services, particularly, how the population responds to the health system and how the health system responds to them, as well as, how these dynamics are shaped by factors that lie outside the health system.

Finally, health inequality monitoring is gaining attention as a political priority in the global context of the SDG (Hosseinpour *et al.*, 2018a). The thesis provided new insights into the case of Mozambique.

Limitations

One of the main difficulties of the thesis has been the availability of data to study health inequalities as it has been illustrated in the study of the national HIS. Mozambique as many other resource-dependent countries in Sub-Saharan Africa, has strong dependencies on top-down policies, limited governmental support, and research funding is being almost exclusively provided by foreign donors and international agencies. Despite a number of initiatives are supporting countries in scaling up national data collection infrastructure, e.g., the CRVS, there is a current lack of data to further study health equity which not only hides the health equity gap in the country but, also limits the scientific research and the national ability to effectively inform local policy development and action towards achieving health equity.

In this thesis, like other studies in the region (Olgiati *et al.*, 2012), we used self-reported health as a comprehensive measure of health status able to capture elements (e.g., mental health conditions) that more guided questions cannot. However, while self-reported health is strong predictor of mortality and morbidity, caution is needed in its interpretation and cross-cultural validity. In this regard, (Burgard and Chen, 2014) suggest the use of vignettes for a cross-cultural equivalence translation of the questions in order to have a more objective and harmonized measure of health. Additionally, because of its nature, self-assessed health provides small guidance on components of health that are being affected (Au and Johnston, 2014). In the paper on the role of social determinants of health, we used days ill, which has also been tested in SSA context and found to be valid (Herrin *et al.*, 2013), to provide complementary insights into the severity of unwellness.

The use of a secondary source of data, despite it has a big sample of the population and it is national representative, it limits the study of the health care and health inequalities. For example, Mozambique has a pluralistic care system where it is common for the population to use multiple sources of health care, for example, the traditional healer is more common in rural and northern provinces. However, the respondents mainly referred to the public sector when answering the healthcare questions of the HBS, thus a more comprehensive analysis distinguishing the different levels of care (i.e. primary care and specialized care) and the health care providers (i.e. public, private and traditional medicine) was not possible. Also, despite the study reported similar results to other studies in SSA, the fact that the quality of care is only reported by those who access healthcare may potentially lead to a loss of information. In the study of the social determinants of health, it was not possible to include ethnicity or race, which may be a relevant axis of social inequalities.

5. Research challenges and policy implications

This thesis highlights important questions that need to be addressed in the domains of research analyses and policy-making in striving for a more comprehensive understanding of the SDH and equitable health systems in low income contexts.

Research challenges

Some of the important challenges that arise from the present thesis are summarised in the following points. First, there is an urgent need to extend the disaggregated analysis of the health inequalities according to axes of social inequality to identify relevant pathways and causal mechanisms. In public health research and low income settings, more systemic approaches should be adopted in order to understand how health inequalities are related with the socioeconomic and political context and the social axes of inequality in a specific time and place. This also implies the use of mixed methods and qualitative research methods such as interviews, focal groups, and participatory action research among others.

Second, for a more effective and equitable distribution of health care among the population, it is important to increase the number of studies in different settings, especially in the mid- and low-income countries, analysing the impact of structural determinants of health on the health system, such as, austerity measures or health sector reforms.

Third, there is also a need for a further understanding of the access and quality provided in the different levels of care of the public health systems in SSA using a gender lens. In this regard, two main aspects must be considered, first a complete and up-to-date assessment of the health facilities, and second, more systematic information of the user experience with the health system. It is also key the construction of transcultural adapted indicators to ensure the validity and reliability of the information. This also include the use of qualitative research methods and the active participation of the users in the identification of gaps and challenges.

Finally, it is needed a close work of the researchers, community and data owners to improve the current situation on data availability. National information systems must be prioritized to work to improve health and its determinants.

Policy implications

Public policies should consider that structural factors affect people's health and go well beyond healthcare systems in order to allow progress for intersectoral actions towards health equity. Current global challenges such as climate change, air and soil pollution, food insecurity, massive population migration, and emerging diseases adds urgency to the need for strong political will and novel regulatory strategies to prevent the harms on the most vulnerable populations.

In a different action level, there is a need to re-think how health systems are conceptualized in low income settings to overcome the current health care inequalities. While increasing domestic revenues mobilization is vital for the health system, equity considerations must be taken into consideration when designing new policies and strategies, in this regard, the participation of local communities in the process of defining health needs, planning and implementing district plans must be considered. The design and implementation of programmes within the public health system need to consider gender relations and roles to ensure that health systems serve to address gender inequalities and advance health outcomes equitably.

Strengthened national HIS to monitor health inequalities are key for policy action on specific country needs. There is an urgent need for high-quality data timely available that can be disaggregated in order to understand the causes of the health and health care inequalities and monitor and evaluate them over time. The Health Ministry should take a leadership role in setting up a strong national HIS and gather together policymakers from Health Ministry and other related ministries such as Ministry of Finance,

Ministry of Gender, Children and Social Action or Ministry of Education, among others, for advocating on technical and political benefits of a strengthened health policy research.

Some reflections on gender

Social structures, with historical and regional differences, encompass all aspects of women's lives and determines and mediates the reproduction and reproductive choices. In other words, women's self-determination in childbearing (if, when and with whom to have children) is influenced by systems of gender relations and these are embedded in socio-ecological, economic and political structures. The generalized focus in the low income countries on maternal health programmes while one may argue that have brought significant improvement over the years for women's health (e.g. significant improvements in reducing maternal mortality), women and girls account for 71% of all human trafficking victims detected globally (UNODC, 2016), and 1 in 3 of women worldwide have experienced either physical and/or sexual intimate partner violence or non-partner sexual violence in their lifetime (World Health Organization, 2013d). This indicates that mainstream reproductive and sexual health programmes do not address their main objective of "empowerment, including for promotion of their sexual and reproductive health and rights [in order to build] sustainable and equitable development of societies" (Fiftieth Commission on Population and Development WHO, New York, 2017). Additionally, this "empowerment" should go beyond sex-based inequalities, for example, 23% of lesbian, gay, bisexual, and transgender interviewed in the EU indicated having experienced physical and/or sexual violence by both male and female non-partner perpetrators (World Health Organization, 2013d).

VII. CONCLUSIONS

Social determinants of health:

- In Mozambique, overall health status has improved over time. However, persistent and substantial structural differences exist in health status – such as between geographical regions, between men and women, among children and older population, and in some cases, these differences appear to be widening.
- Structural factors are major drivers of health inequalities in Mozambique and people's access to basic services and material conditions, despite crucial, are not the main drivers of health inequalities in Mozambique.
- Rural areas of Mozambique are left behind in the progress to attain better health, compared to urban areas that show significant improvements.

Inequalities in the health system:

- Access and quality of PHC in the SSA region are mainly determined by the social position, rather than by the need.
- Health care inequalities in SSA have persisted along the time, and between and within countries.
- In Mozambique, women and men socioeconomically disadvantaged were less likely to use the health care system for the same need compared to more advantaged individuals. Also, women and men from rural areas of the north and centre of the country are less likely to use health care for the same need compared to urban south.

- Women living in the northern area show significantly less probabilities of reporting quality problems compared to those living in urban zones of southern area. Men have less probabilities of reporting quality problems if living in the northern and central area of the country compared to urban south.
- The percentage of users who actually paid during their visits in the public sector is higher than 80%.

Health information systems:

- Important health information gaps exist in the national health information system to monitor and fully comprehend the health equity in Mozambique.

XIII. Bibliography

- Aday LA, Andersen R. 1974. A Framework for the study of access to medical care. *Health Services Research* 9: 208–20.
- Adewuyi EO, Zhao Y, Lamichhane R. 2017. Risk factors for infant mortality in rural and urban Nigeria: evidence from the national household survey. *Scandinavian Journal of Public Health* 45: 543–54.
- AfriMAP and Open Society Initiative for Southern Africa. 2009. Mozambique: Democracy and political participation., South Africa.
- Albert MA, Fretheim A, Maïga D. 2007. Factors influencing the utilization of research findings by health policy-makers in a developing country: the selection of Mali's essential medicines. *Health Research Policy and Systems* 5: 2.
- Andersen RM. 1995. Revisiting the behavioral model and access to medical care: does it matter? *Journal of Health and Social Behavior* 36: 1–10.
- Andersen RM. 2008. National health surveys and the behavioral model of health services use. *Medical Care* 46: 647–53.
- Andoh SY, Umezaki M, Nakamura K, Kizuki M, Takano T. 2006. Correlation between national income, HIV/AIDS and political status and mortalities in African countries. *Public Health* 120: 624–33.
- dos Anjos AL, Cabral P. 2016. Geographic accessibility to primary healthcare centers in Mozambique. *International Journal for Equity in Health* 15: 173.
- Anselmi L, Lagarde M, Hanson K. 2015. Health service availability and health seeking behaviour in resource poor settings: evidence from Mozambique. *Health Economics Review* 5.
- Arnaldo C. 2004. Ethnicity and marriage patterns in Mozambique. 19: 143–64.
- Arnfred S. 2011. *Sexuality and gender politics in Mozambique: Rethinking gender in Africa*. James Currey: Woodbridge.

- Arrivillaga M, Borrero YE. 2016. A comprehensive and critical view of conceptual models for access to health services, 1970-2013. *Cadernos De Saude Publica* 32: e00111415.
- Asakitikpi A. 2015. Health policy reform in Sub-Saharan Africa. In: *The Palgrave international handbook of healthcare policy and governance*. Palgrave Macmillan UK
- Ataguba JE-O, Day C, McIntyre D. 2015. Explaining the role of the social determinants of health on health inequality in South Africa. *Global Health Action* 8.
- Atti E, Gulis G. 2017. Political determinants of progress in the MDGs in Sub-Saharan Africa. *Global Public Health* 12: 1351–68.
- Au N, Johnston DW. 2014. Self-assessed health: what does it mean and what does it hide? *Social Science & Medicine* 121: 21–8.
- Audet CM, Burlison J, Moon TD, *et al.* 2010. Sociocultural and epidemiological aspects of HIV/AIDS in Mozambique. *BMC International Health and Human Rights* 10: 15.
- Bambra C, Pope D, Swami V, *et al.* 2009. Gender, health inequalities and welfare state regimes: a cross-national study of 13 European countries. *Journal of Epidemiology and Community Health* 63: 38–44.
- Bayham M, Blevins M, Lopez M, *et al.* 2017. Predictors of Health-Care Utilization Among Children 6-59 Months of Age in Zambezia Province, Mozambique. *The American journal of tropical medicine and hygiene* 96: 493–500.
- Begashaw B, Tessema F, Gesesew HA. 2016. Health care seeking behavior in southwest Ethiopia. *Plos One* 11: e0161014.
- Benach J, Muntaner C. 2014. *Employment, work and health inequalities: A global perspective*. Icaria Editorial: Barcelona.
- Benjamin S. 2007. The feminization of poverty in post-apartheid South Africa: A story told by the women of Bayview, Chatsworth. *Journal of Developing Societies* 23: 175–206.

- Beste J, Pfeiffer J. 2016. Mozambique's debt and the International Monetary Fund's influence on poverty, education, and health. *International Journal of Health Services* 46: 366–81.
- Braveman P, Gottlieb L. 2014. The social determinants of health: it's time to consider the causes of the causes. *Public Health Reports* 129 Suppl 2: 19–31.
- Bunker JP, Frazier HS, Mosteller F. 1994. Improving health: measuring effects of medical care. *The Milbank Quarterly* 72: 225–58.
- Buor D. 2004. Gender and the utilisation of health services in the Ashanti Region, Ghana. *Health policy* 69: 375–88.
- Burgard SA, Chen PV. 2014. Challenges of health measurement in studies of health disparities. *Social Science & Medicine* 106: 143–50.
- Calikoglu S. 2009. Trends in the distribution of health care financing across developed countries: the role of political economy of states. *International Journal of Health Services: Planning, Administration, Evaluation* 39: 59–83.
- Cash-Gibson L, Rojas-Gualdrón DF, Pericàs JM, Benach J. 2018. Inequalities in global health inequalities research: A 50-year bibliometric analysis (1966-2015). *Plos One* 13: e0191901.
- Chenge MF, Van der Venet J, Luboya NO, *et al.* 2014. Health-seeking behaviour in the city of Lubumbashi, Democratic Republic of the Congo: results from a cross-sectional household survey. *BMC health services research* 14: 173.
- Chinkhumba J, De Allegri M, Muula AS, Robberstad B. 2014. Maternal and perinatal mortality by place of delivery in sub-Saharan Africa: a meta-analysis of population-based cohort studies. *BMC Public Health* 14: 1014.
- Chung H, Muntaner C. 2006. Political and welfare state determinants of infant and child health indicators: an analysis of wealthy countries. *Social Science & Medicine* 63: 829–42.

- Chung H, Muntaner C. 2007. Welfare state matters: a typological multilevel analysis of wealthy countries. *Health Policy* 80: 328–39.
- CSDH. 2008. Closing the gap in a generation: health equity through action on the social determinants of health. Final Report of the Commission on Social Determinants of Health. WHO, Geneva.
- Cueto M. 2004. The origins of primary health care and selective primary health care. *American Journal of Public Health* 94: 1864–74.
- Dahdouh-Guebas F, Ahimbisibwe J, Moll RV, Koedam N. 2003. Neo-colonial science by the most industrialised upon the least developed countries in peer-reviewed publishing. *Scientometrics* 56: 329–43.
- Direcção de planificação e cooperação. 2015. Anuário estatístico de saúde. Ministério da Saúde, Maputo.
- Donabedian A. 1988. The quality of care. How can it be assessed? *JAMA* 260: 1743–8.
- Dos Santos S, Ouédraogo F de C, Soura AB. 2015. Water-related factors and childhood diarrhoea in African informal settlements. A cross-sectional study in Ouagadougou (Burkina Faso). *Journal of Water and Health* 13: 562–74.
- Eshetu E, Woldesenbet S. 2011. Are there particular social determinants of health for the world's poorest countries? *African Health Sciences* 11: 108–15.
- Evans DB, Hsu J, Boerma T. 2013. Universal health coverage and universal access. *Bulletin of the World Health Organization* 91: 546–546A.
- Garcia-Subirats I, Vargas Lorenzo I, Mogollón-Pérez AS, *et al.* 2014a. Determinantes del uso de distintos niveles asistenciales en el Sistema General de Seguridad Social en Salud y Sistema Único de Salud en Colombia y Brasil. *Gaceta Sanitaria* 28: 480–8.
- Garcia-Subirats I, Vargas I, Mogollón-Pérez AS, *et al.* 2014b. Barriers in access to healthcare in countries with different

- health systems. A cross-sectional study in municipalities of central Colombia and north-eastern Brazil. *Social Science & Medicine* 106: 204–13.
- Garimoi Orach C. 2009. Health equity: challenges in low income countries. *African Health Sciences* 9: S49–51.
- Gilson L, Lehmann U, Schneider H. 2017. Practicing governance towards equity in health systems: LMIC perspectives and experience. *International Journal for Equity in Health* 16: 171.
- Hailu A, Lindtjorn B, Deressa W, *et al.* 2016. Equity in long-lasting insecticidal nets and indoor residual spraying for malaria prevention in a rural South Central Ethiopia. *Malaria journal* 15: 366.
- Hangoma P, Aakvik A, Robberstad B. 2017. Explaining changes in child health inequality in the run up to the 2015 Millennium Development Goals (MDGs): The case of Zambia. *Plos One* 12: e0170995.
- Hankivsky O. 2012. Women’s health, men’s health, and gender and health: implications of intersectionality. *Social Science & Medicine* 74: 1712–20.
- Hanlon J. 2004. Do donors promote corruption?: the case of Mozambique. *Third World Quarterly* 25: 747–63.
- Hanratty B, Zhang T, Whitehead M. 2007. How close have universal health systems come to achieving equity in use of curative services? A systematic review. *International Journal of Health Services: Planning, Administration, Evaluation* 37: 89–109.
- Health Financing Strategy Technical Working Group. 2016. Universal health coverage partnership of Mozambique.
- Health Policy Project. 2016. Health financing profile: Mozambique
- Herrin WE, Amaral MM, Balihuta AM. 2013. The relationships between housing quality and occupant health in Uganda. *Social Science & Medicine* 81: 115–22.

- Hosseinpoor AR, Bergen N, Schlotheuber A, Boerma T. 2018a. National health inequality monitoring: current challenges and opportunities. *Global Health Action* 11: 1392216.
- Hosseinpoor AR, Nambiar D, Suparmi, Kusumawardani N. 2018b. Data source mapping: an essential step for health inequality monitoring. *Global Health Action* 11: 1456743.
- IHME. 2016. Financing global health 2015: Development assistance steady on the path to new Global Goals., Seattle.
- ILO. 2013. Domestic workers across the world: Global and regional statistics and the extent of legal protection., Geneva.
- Instituto Nacional de Estatística. 2015. Relatório final do inquérito ao orçamento familiar - IOF-2014/15., Maputo.
- Instituto Nacional de Estatística. 2018. Instituto Nacional de Estatística de Moçambique., Maputo.
- Irwin A, Scali E. 2007. Action on the social determinants of health: a historical perspective. *Global Public Health* 2: 235–56.
- Johnson A, Goss A, Beckerman J, Castro A. 2012. Hidden costs: The direct and indirect impact of user fees on access to malaria treatment and primary care in Mali. *Social Science & Medicine* 75: 1786–92.
- Johnson FA, Frempong-Ainguah F, Padmadas SS. 2016. Two decades of maternity care fee exemption policies in Ghana: have they benefited the poor? *Health policy and planning* 31: 46–55.
- Kok MO, Rodrigues A, Silva AP, de Haan S. 2012. The emergence and current performance of a health research system: lessons from Guinea Bissau. *Health Research Policy and Systems* 10: 5.
- Krieger N. 2000. Refiguring ‘race’: epidemiology, racialized biology, and biological expressions of race relations. *International Journal of Health Services: Planning, Administration, Evaluation* 30: 211–6.
- Krieger N. 2003. Genders, sexes, and health: what are the connections—and why does it matter? *International Journal of Epidemiology* 32: 652–7.

- Krieger N, Smith K, Naishadham D, *et al.* 2005. Experiences of discrimination: Validity and reliability of a self-report measure for population health research on racism and health. *Social Science & Medicine* 61: 1576–96.
- Kruk ME, Gage AD, Arsenault C, *et al.* 2018. High-quality health systems in the Sustainable Development Goals era: time for a revolution. *The Lancet Global Health* 0.
- Kusi A, Hansen KS, Asante FA, Enemark U. 2015. Does the National Health Insurance Scheme provide financial protection to households in Ghana? *BMC Health Services Research* 15.
- Larsen A, Exavery A, Phillips JF, Tani K, Kante AM. 2016. Predictors of health care seeking behavior during pregnancy, delivery, and the postnatal period in rural Tanzania. *Maternal and child health journal* 20: 1726–34.
- Larson E, Vail D, Mbaruku GM, Mbatia R, Kruk ME. 2017. Beyond utilization: measuring effective coverage of obstetric care along the quality cascade. *International Journal for Quality in Health Care* 29: 104–10.
- Lee E, Madhavan S, Bauhoff S. 2016. Levels and variations in the quality of facility-based antenatal care in Kenya: evidence from the 2010 service provision assessment. *Health Policy and Planning* 31: 777–84.
- Lindelow M. 2005. The utilisation of curative healthcare in Mozambique: Does income matter? *Journal of African Economies* 14: 435–482.
- Lindelow M, Ward P, Zorzi N. 2004. Primary health care in Mozambique : service delivery in a complex hierarchy. No. 29097. *The World Bank*.
- Lopez-Ruiz M, Benavides FG, Vives A, Artazcoz L. 2017. Informal employment, unpaid care work, and health status in Spanish-speaking Central American countries: a gender-based approach. *International Journal of Public Health* 62: 209–18.

- Macassa G, Ghilagaber G, Bernhardt E, *et al.* 2003. Inequalities in child mortality in Mozambique: differentials by parental socio-economic position. *Social Science & Medicine* 57: 2255–64.
- Mackenbach JP, Looman CWN, Kunst AE, *et al.* 1988. Post-1950 mortality trends and medical care: Gains in life expectancy due to declines in mortality from conditions amenable to medical intervention in the Netherlands. *Social Science & Medicine* 27: 889–94.
- Mackintosh M. 2000. Do health care systems contribute to inequality? In: Leon D, Walt G (eds). *Poverty, inequality and health: An international perspective*. Oxford University Press: Oxford, 175–93.
- Malmusi D, Artazcoz L, Benach J, Borrell C. 2012. Perception or real illness? How chronic conditions contribute to gender inequalities in self-rated health. *European Journal of Public Health* 22: 781–6.
- Marmot M, Commission on Social Determinants of Health. 2007. Achieving health equity: from root causes to fair outcomes. *The Lancet* 370: 1153–63.
- McKay R. 2018. *Medicine in the meantime : the work of care in Mozambique*. Duke University Press: Durham.
- Mckeown T, Record RG, Turner RD. 1975. An interpretation of the decline of mortality in England and Wales during the twentieth century. *Population Studies* 29: 391–422.
- Meessen B, Hercot D, Noirhomme M, *et al.* 2011. Removing user fees in the health sector: a review of policy processes in six sub-Saharan African countries. *Health Policy and Planning* 26: ii16–29.
- MEF. 2016. Pobreza e bem-estar em Moçambique: quarta avaliação nacional (IOF 2014/15)., Maputo.
- Memirie ST, Verguet S, Norheim OF, *et al.* 2016. Inequalities in utilization of maternal and child health services in Ethiopia: the role of primary health care. *BMC Health Services Research* 16: 51.

- Mezmur M, Navaneetham K, Letamo G, Bariagaber H. 2017. Socioeconomic inequalities in the uptake of maternal healthcare services in Ethiopia. *BMC health services research* 17: 367.
- Ministério da Saúde. 2010. Informe sobre recursos humanos para saúde no serviço nacional de saúde de Moçambique., Maputo.
- Ministério da Saúde. 2012. Relatório da revisão do sector de saúde., Maputo.
- Ministério da Saúde. 2013a. Plano estratégico do sector da saúde 2014-2019., Maputo.
- Ministério da Saúde. 2013b. Informe sobre recursos humanos para saúde no serviço nacional de saúde de Moçambique., Maputo.
- Ministério da Saúde. 2014. Relatório de recursos humanos., Maputo.
- Ministério da Saúde. 2015. Proposta do programa quinquenal do Governo 2015-2019., Maputo.
- Ministerio da Saúde. 2016. Plano nacional de desenvolvimento de recursos humanos para a saúde 2016-2025., Maputo.
- Ministério da Saúde, Instituto Nacional de Estatística, ICF International. 2011. Inquérito demográfico e de saúde., Maputo.
- Ministerio da Saúde, Conselho de Ministros. Resolução nº 4/95 de 11 de Julho., Maputo.
- Ministério de Género, Criança e Acção Social. 2016a. Perfil de género de Moçambique., Maputo.
- Ministério de Género, Criança e Acção Social. 2016b. National basic social security strategy (2016-2024). República de Moçambique., Maputo.
- Morgan R, Ayiasi RM, Barman D, *et al.* 2018. Gendered health systems: evidence from low- and middle-income countries. *Health Research Policy and Systems* 16: 58.
- Mtowa A, Gerritsen AAM, Mtenga S, *et al.* 2017. Socio-demographic inequalities in HIV testing behaviour and HIV

- prevalence among older adults in rural Tanzania. *AIDS care* 29: 1162–8.
- Munguambe K, Boene H, Vidler M, *et al.* 2016. Barriers and facilitators to health care seeking behaviours in pregnancy in rural communities of southern Mozambique. *Reproductive Health* 13: 31.
- Ndege GO. 2007. *Culture and customs of Mozambique*. Greenwood Publishing Group.
- Ndumbe-Eyoh S, Moffatt H. 2013. Intersectoral action for health equity: a rapid systematic review. *BMC Public Health* 13: 1056.
- Nhampossa T, Mandomando I, Acacio S, *et al.* 2013. Health care utilization and attitudes survey in cases of moderate-to-severe diarrhea among children ages 0-59 months in the District of Manhica, southern Mozambique. *The American Journal of Tropical Medicine and Hygiene* 89: 41–8.
- Ntouda J, Sikodf F, Ibrahim M, Abba I. 2013. Access to drinking water and health of populations in Sub-Saharan Africa. *Comptes Rendus Biologies* 336: 305–9.
- O'Donnell O. 2007. Access to health care in developing countries: breaking down demand side barriers. *Cadernos De Saúde Pública* 23: 2820–34.
- Olgiati A, Bärnighausen T, Newell M-L. 2012. Do self-assessments of health predict future mortality in rural South Africa? The case of KwaZulu-Natal in the era of antiretroviral treatment. *Tropical medicine & international health* 17: 844–53.
- Oryema P, Babirye JN, Baguma C, *et al.* 2017. Utilization of outreach immunization services among children in Hoima District, Uganda: a cluster survey. *BMC research notes* 10: 111.
- Ottersen OP, Dasgupta J, Blouin C, *et al.* 2014. The political origins of health inequity: prospects for change. *The Lancet* 383: 630–67.
- Palència L, De Moortel D, Artazcoz L, *et al.* 2017. Gender policies and gender inequalities in health in Europe: Results of the

- SOPHIE project. *International Journal of Health Services* 47: 61–82.
- Palmer A, Anya SE, Bloch P. 2009. The political undertones of building national health research systems – reflections from The Gambia. *Health Research Policy and Systems* 7: 13.
- Pellegrini Filho A. 2011. Public policy and the social determinants of health: the challenge of the production and use of scientific evidence. *Cadernos de Saúde Pública* 27: s135–40.
- Peltzer K, Williams JS, Kowal P, *et al.* 2014. Universal health coverage in emerging economies: findings on health care utilization by older adults in China, Ghana, India, Mexico, the Russian Federation, and South Africa. *Global Health Action* 7: 25314.
- Penchansky R, Thomas JW. 1981. The concept of access: definition and relationship to consumer satisfaction. *Medical Care* 19: 127–40.
- Phiri J, Ataguba JE. 2014. Inequalities in public health care delivery in Zambia. *International Journal for Equity in Health* 13: 24.
- Pinkhasov RM, Wong J, Kashanian J, *et al.* 2010. Are men shortchanged on health? Perspective on health care utilization and health risk behavior in men and women in the United States. *International Journal of Clinical Practice* 64: 475–87.
- Pons-Duran C, González R, Quintó L, *et al.* 2016. Association between HIV infection and socio-economic status: evidence from a semirural area of southern Mozambique. *Tropical medicine & international health* 21: 1513–21.
- Redondo-Sendino Á, Guallar-Castillón P, Banegas JR, Rodríguez-Artalejo F. 2006. Gender differences in the utilization of health-care services among the older adult population of Spain. *BMC Public Health* 6: 155.
- Ruger JP. 2007. Rethinking equal access: Agency, quality, and norms. *Global Public Health* 2: 78–96.

- Salvucci V. 2014. Health provider choice and implicit rationing in healthcare: Evidence from Mozambique. *Development Southern Africa* 31: 427–51.
- Sharma J, Leslie HH, Kundu F, Kruk ME. 2017. Poor Quality for Poor Women? Inequities in the Quality of Antenatal and Delivery Care in Kenya. *Plos One* 12.
- Sia D, Onadja Y, Hajizadeh M, *et al.* 2016. What explains gender inequalities in HIV/AIDS prevalence in sub-Saharan Africa? Evidence from the demographic and health surveys. *BMC Public Health* 16: 1136.
- Solar O, Irwin A. 2010. A conceptual framework for action on the social determinants of health. social determinants of health discussion paper 2 (policy and practice)., Geneva.
- Starfield B, Shi L, Macinko J. 2005. Contribution of Primary Care to Health Systems and Health. *The Milbank Quarterly* 83: 457–502.
- Taffa N, Chepngeno G, Amuyunzu-Nyamongo M. 2005. Child morbidity and healthcare utilization in the slums of Nairobi, Kenya. *Journal of tropical pediatrics* 51: 279–84.
- The World Bank. 2014. Mozambique public expenditure review. Addressing the challenges of today, seizing the opportunities of tomorrow. No. 91153-MZ.
- The World Bank. 2015a. Health service delivery in Mozambique: Results of 2014 service delivery indicator survey.
- The World Bank. 2015b. Mozambique health public expenditure review (2009-2013).
- The World Bank. 2018a. World Bank open data.
- The World Bank. 2018b. World development indicators.
- Tudor Hart J. 1971. The inverse care law. *The Lancet* 297: 405–12.
- UNAIDS. 2014. The global AIDS response progress report (GARPR). Conselho Nacional de Combate ao HIV e SIDA (CNCS)., Maputo
- UNICEF. 2016. Budget brief 2016: health., Maputo.
- United Nations. 2015a. Transforming our world: The 2030 agenda for sustainable development., New York.

- United Nations. 2015b. The Millennium Development Goals Report., New York.
- UNODC. 2016. Global report on trafficking in persons., Vienna.
- Vaidya V, Partha G, Karmakar M. 2011. Gender Differences in Utilization of Preventive Care Services in the United States. *Journal of Women's Health* 21: 140–5.
- Wagenaar BH, Gimbel S, Hoek R, *et al.* 2014. Stock-outs of essential health products in Mozambique - longitudinal analyses from 2011 to 2013. *Tropical medicine & international health* 19: 791–801.
- Wagenaar BH, Gimbel S, Hoek R, *et al.* 2016. Wait and consult times for primary healthcare services in central Mozambique: a time-motion study. *Global Health Action* 9: 31980.
- Wang H, Ramana G. 2014. Universal health coverage for inclusive and sustainable development: Country Summary Report for Ethiopia. The World Bank Group.
- Weber L, Parra-Medina D. 2003. Intersectionality and women's health: charting a path to eliminating health disparities. In: *Gender perspectives on health and medicine (advances in gender research, Volume 7)*. Emerald Group Publishing: Bingley.
- Weimer B. 2008. Capítulo 3: Saúde para o povo? Para um entendimento da economia política e das dinâmicas da descentralização no sector da saúde em Moçambique. In: *Moçambique: Descentralizar o centralismo? Economia política, recursos e resultados*. IESE-Instituto de Estudos Sociais e Económicos., Maputo.
- Werner D, Sanders D. 1997. *Questioning the solution: the politics of primary health care and child survival*. Healthwrights: Palo Alto.
- Whitehead M. 1992. The concepts and principles of equity and health. *International Journal of Health Services: Planning, Administration, Evaluation* 22: 429–45.

- Whitehead M, Dahlgren G. 2007. Concepts and principles for tackling social inequities in health: Levelling up Part 1. World Health Organization.
- WHO, OECD, WB. 2018. Delivering quality health services – A global imperative for universal health coverage., Geneva.
- WHO and UNICEF. 1978. Declaration of Alma-Ata., Geneva.
- WHO Regional Office for Africa. 2014. The health of the people: what works: the African regional health report., Brazzaville.
- World Health Organization. 2010. Health systems financing: the path to universal coverage., Geneva.
- World Health Organization. 2013a. Health in all policies: report on perspectives and intersectoral actions in the African region. WHO Regional Office for Africa, Brazzaville.
- World Health Organization. 2013b. State of health financing in the African Region., Brazzaville.
- World Health Organization. 2013c. Handbook on health inequality monitoring with a special focus on low- and middle-income countries. Geneva.
- World Health Organization. 2013d. Global and regional estimates of violence against women: prevalence and health effects of intimate partner violence and non- partner sexual violence., Geneva.
- World Health Organization. 2014. WHO global health expenditure atlas., Geneva.
- World Health Organization. 2015a. World report on ageing and health., Geneva.
- World Health Organization. 2015b. Trends in maternal mortality: 1990 to 2015: estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division., Geneva.
- World Health Organization. 2016a. Global health estimates 2016: Estimated deaths by cause and region, 2000 and 2016., Geneva.
- World Health Organization. 2016b. Global strategy on human resources for health: workforce 2030., Geneva.

- World Health Organization. 2016c. Mozambique factsheet. African Health Observatory., Brazzaville.
- World Health Organization. 2018. Global health estimates 2016: years lost due to disability., Geneva.
- Yao J, Agadjanian V, Murray AT. 2014. Spatial and social inequities in HIV testing utilization in the context of rapid scale-up of HIV/AIDS services in rural Mozambique. *Health & place* 28: 133–41.
- Zere E, McIntyre D. 2003a. Inequities in under-five child malnutrition in South Africa. *International Journal for Equity in Health* 2: 7.
- Zere E, McIntyre D. 2003b. Equity in self-reported adult illness and use of health service in South Africa: inter-temporal comparison. *Journal of health, population, and nutrition* 21: 205–15.

IX. APPENDIX

In addition to the work presented in this thesis, I have been able to also contribute with the publication of a scientific article in *Gaceta Sanitaria* that is not related to the thesis but is complementary in the global understanding of the health systems:

- Llop-Gironés A, Vergara-Duarte M, Sánchez JA, Tarafa G and Benach J. 2017. The value of comparative research in major day surgery. *Gaceta Sanitaria* 32:369–372.

Furthermore, during the thesis I have been invited to contribute in different academic and policy-making forums and conferences:

- Participation as non-state actor at the 71st World Health Assembly. World Health Organization, Geneva (2018)
- Participation at Brown University. BIARI: Ethnicity, Conflict, and Inequality in Global Perspective (2017)
- Invited speaker at the World Health Organization, Mozambique, technical session “Comparison of health indicators: where are we now?” (2016)
- Invited lecturer of the Master of Advanced Studies in Social Exclusion. Nursing School University of Barcelona - Sant Joan de Déu “Social determinants of health: a global perspective” (2016)
- Invited speaker at the Open University. Workshop on embedding empowerment of nurses and midwives in health systems research “Nursing, power relations and the room for improvement” (2016)
- Oral presentation at Brown University. BIARI in Spain: Global Health “Social Inequalities in Health and Primary Health Care in Mozambique” (2016)

